



THE UNIVERSITY *of* EDINBURGH

## Edinburgh Research Explorer

### Overhauling China's financial stability regulation

**Citation for published version:**

Avgouleas, E & Xu, D 2017, 'Overhauling China's financial stability regulation: Policy riddles and regulatory dilemmas', *Asian Journal of Law and Society*, vol. 4, no. 1, pp. 1-57. <https://doi.org/10.1017/als.2017.3>

**Digital Object Identifier (DOI):**

[10.1017/als.2017.3](https://doi.org/10.1017/als.2017.3)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Peer reviewed version

**Published In:**

Asian Journal of Law and Society

**Publisher Rights Statement:**

This article has been published in a revised form in Asian Journal of Law and Society <https://doi.org/10.1017/als.2017.3>. This version is free to view and download for private research and study only. Not for re-distribution, re-sale or use in derivative works. © Cambridge University Press and KoGuan Law School, Shanghai Jiao Tong University

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



# Overhauling China's Financial Stability Regulation: Policy Riddles and Regulatory Dilemmas

Emilios AVGOULEAS

Duoqi XU

## Abstract

China faces a number of important financial-stability risks. A persistent feature of the Chinese banking sector is the rapid formation of non-performing loans (NPLs) during each business cycle. Moreover, lending restrictions and interest-rate caps ("financial repression") have, in part, given rise to an ever-expanding shadow-banking sector. The article highlights five cardinal sins within the Chinese financial system: (1) bad lending practices by the regulated sector, (2) lax governance, (3) a shadow-banking system that is dominated by short-term claims with no liquidity backstop, (4) stark lack of transparency in the shadow sector, and (5) very high levels of interconnectedness between the shadow and the regulated sector. The article suggests that some of these problems will be alleviated through a regulatory big bang that would abolish the current silo approach to financial regulation streamlining financial stability and conduct/consumer-protection supervision. Furthermore, we recommend the introduction of a binding and all-encompassing leverage ratio that will require banks to hold much higher capital buffers as a means to boost bank resilience, reduce NPLs, and battle interconnectedness with the shadow sector.

## 1. INTRODUCTION

### 1.1 Overview

In the last three decades, China has posted impressive growth rates. During this period, there has not been a single social or economic indicator that has not improved from disposable income to percentage of population in full-time education and life expectancy. Between 1990 and 2008, Chinese growth came at the back of an investment-rich and export-intensive manufacturing sector. But, since 2008, domestic demand has taken off as well in many areas. This has led to a staggering expansion of credit in the Chinese economy and the suspicion of developing asset bubbles in the housing sector.

Lower rates of growth for the global economy and the rise of cheaper regional competitors have meant a slowing-down in Chinese exports during recent years. This has had an adverse impact on the manufacturing sector, which has led to the accumulation on bank balance sheets of a large number of non-performing loans (NPLs) mostly extended to state-owned enterprises (SOEs), which also enjoy an implicit government guarantee for their debt funding. <sup>1</sup> Apart from the impact on growth that NPLs and debt overhang <sup>2</sup> bring, they also hinder efforts to augment governance standards within SOEs and to attract outside investment. While SOE bad loans are notoriously difficult to tackle without mounting expensive bailouts, their proliferation constitutes a regulatory paradox, since Chinese banks are subject to strict loan-to-deposits ratios and lending restrictions.

The triple advent of rapid credit expansion, suspected asset bubbles, and mounting NPLs has made the People's Republic of China (PRC) financial system look fragile. 3 What makes things worse is that lending restrictions, interest-rate caps, and other credit-supply restraints and biases (so-called "financial repression") have given rise to a relatively large shadow-banking sector, 4 depending, of course, to some extent on how shadow banking is defined, 5 given also the specific characteristics of the PRC shadow financial system. 6

The development of the shadow-banking sector has been instrumental in the PRC's financial development in the last decade, but it also gives rise to all kinds of financial-stability and consumer-protection concerns. A large part of the shadow sector is nothing else but regulated banks doing business off the balance sheet. 7 Clearly, the People's Bank of China (PBOC) loan quotas are constraining the ability of most banks to lend as much as they would otherwise choose to do, inspiring a recent relaxation of lending caps, offering plenty of room for loan substitution by shadow operators, which, often, are bank-affiliate companies. Even more important are interest-rate caps on deposits, which act as a subsidy to the banking sector. At the same time, most banks are finding it difficult to raise inexpensive deposits sufficient to fund their loan growth. The caps on deposit interest rates have led many depositors to instead place money with the shadow-banking operators through the credit/investment products (so-called wealth-management products (WMPs)), shadow banks tend to offer. 8

Arguably, an even more critical factor for the expansion of regulated banks in the shadow sector is the change of business model that regulated banks have undergone, which is well explained by Professor Shen Wei 9 while other studies have remained silent on this point. The fact that regulated banks have in recent years transformed themselves from being low-profit utilities that were lending for the long term and were content to base their income on interest-rate differentials to high return on equity business means that they have turned into loan origination and subsequent securitization of credits via the "originate-to-distribute" model to boost income.

Beyond the aforementioned loan origination and distribution and the obvious channel of on-balance-sheet loans that banks supply to non-bank financial institutions, the formal sector is connected to the shadow-banking sector in many other ways. First, bank affiliates sometimes have ownership stakes in trust companies or other non-bank financial institutions and, as a result, product mis-performance can become a hidden (contingent) bank liability. A trust company may make a loan to a bank client with the agreement that the bank will essentially buy the loan back by purchasing Trust Beneficiary Rights (TBRs). 10 Banks sometimes use TBRs as part of complex shadow-banking transactions to keep the economic benefits of a loan without showing it as a loan on their balance sheets, but moving it to a more favourably treated investment category. Second, banks may enter into repurchase agreements using loans or WMPs as collateral, so that the trust company knows that the ultimate economic risk will fall on the bank. The trust company's own risk is therefore simply the counterparty risk of the bank. Other more recent products like directed asset-management plans also blend the line between credit and investment, and increase bank exposures in ways that are less than transparent, 11 increasing bank vulnerability to future risks. Thus, the health of the shadow sector can offer grounds of serious concern for regulated banks (for a comprehensive discussion of the links of interconnectedness and interdependence between regulated banks and the shadow sector, see Section 2 below).

Regulatory arbitrage and interest-rate arbitrage are the key factors behind the "ballooning" of the Chinese shadow-banking system, with speculation coming a close second. By skirting capital requirements, since they book most shadow financing as receivables, banks can rapidly increase their assets and, to some extent, profitability. But a large shadow-banking sector unsupported by a

liquidity provider is at constant risk of financial instability. The first concern refers to maturity mismatches and the risk of inability to refinance. 12 Namely, what happens in the event of a credit crunch in the case that a multitude of contracts should be rolled over in a sector that operates without the protective net of a committed and adequately resourced liquidity provider like the lender of last resort (LoLR)? Overall, shadow-banking products provide the bulk of short-term-funding liabilities within the Chinese financial system, raising the prospect of instability in the event of a sudden disappearance of liquidity. 13

Second, there is the question of possible credit-risk migration. Shadow banks are highly leveraged and, given the absence of capital regulations, they will probably not be able to cover any credit losses relating to counterparty defaults. In particular, the brokers who intermediate the credit products marketed by the shadow sector do not have the balance sheet to cover eventual losses. If it all goes bad, the brokers do not have the balance sheet to support it, and somebody else should come and plug the losses. Namely, absence of capital regulations means that a number of shadow-banking firms will probably not be able to cover credit losses relating to counterparty defaults. 14 So it is right to assume that banks still hold onto some of this credit risk.

## 1.2 Summary of Proposals

This article raises a critical question with respect to the PRC's two biggest sources of financial-stability risk: shadow-banking 15 risks and the tackling of NPLs. Is there a set of reforms that could make the growth versus financial-stability dilemma less acute and also add transparency to the financial system? In our view, the core of this question is twofold. First, could the highly ineffective silo approach to financial regulation that the PRC currently operates be replaced with a more effective system of financial-risk monitoring and prudential enforcement? Second, which set of regulatory measures could be implemented so that possible costs of restrictive regulation would not exceed the benefits of financial development?

This article attempts to answer these questions by focusing on the role of PRC banks in this environment of mounting financial-stability challenges rather than the shadow sector itself, as is the case with other studies. We propose that financial-stability reform in the PRC should encompass a radical reconfiguration of the Chinese regulatory system to augment and streamline financial-stability monitoring, microprudential supervision, and consumer protection. Our proposal is more radical than the mere introduction of a financial-stability council in the PRC and requires the radical restructuring of existing PRC financial regulators.

Many commentators have debated whether the PRC shadow-banking sector should be regulated on its own, conceiving it as a system of financing that runs parallel to the banking system. But that is a fundamental misconception in terms of both conduct risk, which is rife, 16 and the structure and motives of expansion of the PRC shadow-banking system, which differs in several substantial respects from the US shadow-banking sector. As has been accurately noted, PRC shadow banking is bank-centric rather than a system sourcing finance through the (short-term) capital markets, as is the case in the US. It is also boosted by implicit guarantees rather than financial engineering. 17 Finally, it is heavily reliant on retail funding rather than being an efficient way to source wholesale funding, as is the case with its US counterpart. 18 The underdevelopment of the PRC market for securitized debt only serves to underscore this point.

So, it may not be seen as a self-standing system of financing, even though it is not entirely parasitic; on the contrary, in the case of loans to small and medium enterprises (SMEs) or equity

crowdfunding, it does serve genuine financing needs and aids financial development. Therefore, PRC's shadow-banking system should be conceived as a more or less parallel banking system that short-circuits the regulated sector due to both opportunity to profit from arbitrage and counter financial repression.

For this reason, in our view, the orderly operation of the PRC shadow-banking sector requires the improvement of the regulation of banks and a wider paradigm shift in the economy towards equity funding with a proliferation of risk-equity capital schemes moving away from the current model of funding for economic activity that is overwhelmingly debt-driven.

This dual-track reform is necessary to both increase the resilience of banks and battle the effects of interconnectedness. As things stand, it is, ultimately, the regulated sector that will have to absorb any financial-stability shocks. <sup>19</sup> Therefore, to address financial-stability challenges facing the PRC financial system, we recommend higher levels of capital than the Basle III requirements as a first-line defence. While our proposals may seem too bold and out of line with earlier studies that suggest a piecemeal approach, it should be noted that our recommendations are much in line with the findings and suggestions of the more recent IMF Review of the PRC under Article IV. <sup>20</sup> In this context, we suggest the introduction of a binding and all-encompassing leverage ratio, which would catch off-balance sheet exposures, and whose breach would require near immediate replenishment of capital buffers rather than using it as a reporting tool, as is the current approach. <sup>21</sup>

System-wide leverage and interconnectedness within the shadow sector—which, of course, varies in the course of the leverage cycle—is identified as the major financial-stability risk of the PRC banking system by most foreign observers, including credit-rating agencies. <sup>22</sup> Such a measure will bring hidden exposures on the balance sheet or make banks accountable for them. Moreover, while it is commonly assumed that binding leverage ratios act as a constraint on lending, as capital is expensive to raise, this can prove inaccurate if the tax benefits for debt funding are reversed. Admati and Hellwig have proven that, in principle, assuming away tax disincentives (or, we add, weak balance sheets), equity funding should not be a more expensive way to fund loans than deposits. <sup>23</sup>

The government of the PRC has already imposed a number of comprehensive restrictions on self-dealing and thus banks are no longer allowed to invest in their own WMPs. <sup>24</sup> Also, better provisioning is discussed in an attempt to clamp down on shadow-banking activity that is taken without adequate margins. <sup>25</sup> Yet, a clear and emergent danger is that banks may still manage to bypass such rules by means of complex investment products that have come to resemble collateralized debt obligations and worse. <sup>26</sup> Naturally, an all-encompassing leverage ratio will automatically shed light on many of those exposures and, even more importantly, on the way banks value them. It will also clamp down on complex accounting techniques that banks currently employ to move credit financing and attendant risk off the balance sheet.

But leverage ratios may not be introduced on their own. They should be supplemented by the gradual abolition of current lending restrictions and interest-rate caps. In particular, the loans-to-deposits cap makes no sense, as banks can easily fund loans through equity capital, <sup>27</sup> or even long-term bond financing. Equity financing could also make up for any funding shortfall that all-encompassing bank-leverage ratios may cause shielding the rate of the PRC's financial development from any sharp deleveraging. <sup>28</sup>

The abolition of lending restrictions that have proved counter-productive and a gradual, yet wholesale, shift towards equity financing is bound to be much more than a piecemeal intervention. Offering strong incentives to equity-financed investment funds, including removal of any tax

disincentives as well corporate law reforms, amounts of course to strong and centrally driven promotion of a culture of equity ownership. But it is a necessary leap that the PRC government seems willing to take. 29

A rich vein of macroprudential research has highlighted the importance of the interaction of the credit channel with asset price levels and the impact of macroeconomic developments on financial stability. 30 In fact, while the previous paradigm examined the impact of the credit channel on levels of economic activity, 31 this new line of research looks at the impact of the macro-economy on financial stability. 32 Accordingly, this article discusses, inter alia, the role of all-encompassing leverage ratios as microprudential and macroprudential measures and indicates how these could improve financial stability in the Chinese financial sector and foster good bank governance. In this context, the article explores contemporary rationales and uses of leverage ratios in banking and explains the role of the leverage cycle in causing financial instability. It also discusses the perceived disadvantages of leverage ratios and points to contemporary empirical evidence that is largely dismissive of such concerns. But, in the case of highly leveraged economies like China, or the US in 2008, or economies that are over-dependent on bank lending, leverage ratios could be a growth risk, unless they are accompanied by wholesale reforms, including tax measures, to augment equity investment across the board.

This article is divided into six parts. The first part is the present introduction. The second part offers an analytical overview of the financial-stability challenges facing the PRC today, including a comprehensive discussion of the problem of bank NPLs and the nature of regulated banks' exposures to shadow-banking risks. The third part discusses regulatory architecture theory and developments in the West since 2008 for the benefit of comprehensive comparisons with PRC regulatory architecture and reform. It focuses in particular on key micro- and macroprudential breakthroughs and the new wave of leverage ratios. The fourth part discusses the merits and potential demerits of leverage ratios and especially the possibility that these may have an impact on credit expansion in a given economy and thus affect growth. The fifth part sets out a proposal for radical reform of the PRC regulatory system and bank capital, and explains the nature of counter-veiling measures to absorb potential funding shortfalls. While, at this stage, the discussion is more or less conceptual, it is hoped that we open the path for ensuing quantitative work that would, as we hope, robustly test the feasibility of our proposals. Finally, the sixth part brings together the different strands of the present analysis, offering a comprehensive conclusion.

## 2. THE PRC'S FINANCIAL-STABILITY CHALLENGES AND THE REFORM DEBATE

### 2.1 Why Are NPLs a Recurrent Problem in the PRC?

#### 2.1.1 The Drivers of NPL Formation within Chinese Banks

Banks have completely dominated China's credit system from the start of the era of "reform and opening up" in 1978 until shadow banking began to take off in the 2000s. Banks have inherited a privileged position in China, shored up by 33 :

a captive customer base, since almost all lending until 2008 was done through banks, giving them a huge existing customer base, especially with the SOEs that dominated the economy;

competition restrictions giving very few legal alternatives to bank deposits or bank loans in China's highly controlled economy;

implicit guarantees <sup>34</sup> —banks benefitted from a free implicit guarantee on their deposits, despite the lack of formal guarantees; this safety allowed banks to gather large deposit volumes despite paying low rates;

controls on deposit and loan rates, as banks were subject to regulatory limits on the maximum deposit rate they could pay and the minimum loan rate they could charge; interest caps and ceilings could ensure healthy profit margins.

At the same time, the state imposed significant constraints. In principle, the most important constraints have been the following <sup>35</sup> :

Controls on loan volumes—the PBOC set limits for total loan volume by banks in aggregate and these limits were then apportioned out to individual banks. Given bank dominance of the financial sector controlling the volume of bank loans meant controlling overall money supply, which was an effective way to run Chinese monetary policy. These restricted bank lending to the SME sector.

Micromanagement of lending that was often directed by important government or party officials made things worse for the SMEs sector. This type of directed lending is rarer today, except for smaller banks that are closely tied to regional or local governments, though overall strategic directing of credit remains.

Strict loan-to-deposit ratios that do not allow banks to lend funds over 75% of their deposits. This has proved to be a serious constraint on loan growth, especially as the growth of bank deposits has slowed down sharply in the face of competing investment products. As a result, regulators recently allowed some non-traditional deposit inter-bank market lending to be counted towards the 75% rate to relax the lending cap a little. A key function of fractional reserve banks is to offer liquidity on demand by employing deposits to make loans, keeping only a fraction of them in reserve. <sup>36</sup> But bank loans (assets) can also be financed by more expensive means of funding, such as common equity and, in some cases, longer-term debt. If the cost of lending adjusts accordingly, then restricting bank lending by calculating it over a fraction of bank deposits is an inefficient means to restrict lending, especially as credit supply can migrate to the shadow sector.

The high reserve requirements imposed by the PBOC, which seem to boost shadow lending and regulatory arbitrage. Banks are required to hold substantial reserves as deposits at the PBOC, earning rates far below what banks could earn on their normal business and even below their own cost of funds. This level varies, but currently about 19.5% of deposits must be placed with the PBOC. Deposits remain the major source of bank funding, so the reserve requirements represent a substantial cost in aggregate.

State ownership—until 2004, the major banks in China were 100% owned by the state—which, by means of majority shareholdings, gives the government effective control of all major banks, particularly in personnel decisions, where the top management come from senior state positions and have not competed in a free labour market. So, their outlook is different from executives who have had private-sector careers. It is thus unsurprising that, even when directed lending was relaxed, banks kept favouring SOEs in their lending policies.

Strong SOE lending bias due to risk factors—SOEs are also favoured because of implicit state guarantees and privileged favoured market positions, which make them safer borrowers. This tendency is reinforced by internal reward and punishment systems. A failed loan to an SOE is

unlikely to be punished severely, while bad loans to the private sector can lead to job loss. Similarly, bank-manager career considerations make lending to entities run by powerful party members attractive.

SME funding—a reverse bias. PRC banks have consistently shown an aversion to lending money to private-sector entities<sup>37</sup> and especially SMEs. This bias is of critical importance for both the historical development of the shadow-banking system and the PRC's future economic growth. More recently, SMEs have been the backbone of Chinese growth, reportedly providing 70% of employment and 60% of China's GDP [gross domestic product] in 2012, while they only received about 20–36% of bank lending during the same year.<sup>38</sup> While there has been a gradual improvement in terms of SOE-lending ratios, banks' lending to the private sector still lags substantially behind lending ratios in other large economies—a bias that also affects to a significant degree bank profitability. The lack of long-standing and deep links between lenders and SMEs explains, in part, why the bulk of SME deposits go to the inter-bank market, where rates are not capped. But this places banks at a disadvantage when it comes to on-balance-sheet lending, given the aforementioned loans-to-deposits caps.

The combined effect of aforementioned factors and especially the bias to extend loans to SOEs without adequate credit controls has meant that the PRC banks accumulated a large number of NPLs in both the pre-2008 and the post-2008 periods. Although China's economy was less affected than other countries in the region during the Asian financial crisis, due to the relatively closed nature of its economy and financial sector back then, PRC banks accumulated a substantial number of number NPLs during that period.<sup>39</sup> These necessitated a number of reforms in 1998, which included: (1) recapitalization of state-owned banks; (2) adoption of international classification standards for NPLs; (3) enforcement of commercially viable loans to avert strategic defaults, whereby debtors default because the lender cannot effectively enforce the loan via the legal system; and (4) banning local governments from influencing lending decisions.<sup>40</sup>

Bank recapitalization was funded by the government's issuing bonds valued at RMB 270 billion (Chinese yuan).<sup>41</sup> In 1999, four state-owned asset-management companies (AMCs) were established to transfer NPLs from the banks over a ten-year period.<sup>42</sup> Transfers of NPLs took place during 1999–2000, amounting to a staggering RMB 1.4 trillion—about 20% of the banks' combined loan book, or 18% of GDP.<sup>43</sup> It has been estimated that this was less than half of the total NPLs.<sup>44</sup> After implementation of these measures, NPLs dropped to around 20% in 2000, but it took until 2004 for them to fall to a more manageable 13.2%; eventually, they fell to 2.4% in 2008<sup>45</sup> as a result of the strongest GDP growth.

In 2004, the government decided to list the state-owned banks, starting the so-called “equitization” phase. To bolster the balance sheet of the Bank of China (BoC) and the China Construction Bank (CCB), which were floated first on the Shanghai and Hong Kong Stock Exchanges, the PBOC transferred RMB 320 billion in NPLs from the BoC and CCB to Asset Management Companies for 30–40% of the book value.<sup>46</sup> The government also injected \$45 billion of capital, which boosted capital-adequacy ratios and supported new lending that could offset the impact of existing NPLs on bank profitability.<sup>47</sup>

The original AMCs are still operating today, maintaining distressed asset sales as their core business. China Huarong Asset Management (CHAM) is the largest AMC, having absorbed 55% or 264 billion yuan-worth of bank NPLs in the first half of 2016, and expects the second half of the year to yield similar results.<sup>48</sup> The Chairman of CHAM has noted that the quality of NPLs is deteriorating, making it harder to earn a profit, with the average disposal time being from one to three years.<sup>49</sup>



### 2.1.2 Tackling Bank NPLs Post 2008—a “Bottomless Pit”?

Tackling NPLs has become an increasing concern for the PRC in recent months. As discussed below, the central government had to essentially mount yet another expensive and covert bailout of banks in the course of 2016. This new period started after the 2008 financial crisis, when the central government decided to implement a RMB 4 trillion economic stimulus and loosen up monetary policy, in contrast with earlier periods when the government controlled tightly the money supply. The loosening-up of the monetary base was transmitted through the banking system in the form, *inter alia*, of lower interest rates and new lending.<sup>50</sup> Such measures eventually became so widespread as to deviate from the original purpose, which was to use them as a monetary stimulus, and evolved into a replacement for a fiscal stimulus.

However necessary the stimulus was, relaxed standards of bank supervision and loan underwriting meant that the PRC did not avoid a new crisis of NPL accumulation, even though it had just finished dealing with the last one. To this effect, Arner et al. note that “as growth rates have started to decelerate and the levels of private and corporate indebtedness have substantially risen in the post-2008 period, this has led to a simultaneous and substantive increase in the level of assets prices and NPLs.”

With NPL ratios among China’s commercial banks increasing for 19 consecutive quarters, debt to GDP standing at approximately 225% and increasing, and corporate debt at approximately 145%, the IMF among others has raised concerns calling for rebalancing measures.<sup>51</sup> The IMF conservatively estimates that, in 2016, Chinese bank corporate loan portfolio losses could equate 7% of GDP.<sup>52</sup> Other sources note that official data show that NPLs at Chinese commercial banks jumped 51% in 2015 to a decade high of RMB 1.27 trillion amid a stock-market rout and the worst economic growth in a quarter of a century.<sup>53</sup> This is more or less the official figure, as disclosed by the China Banking Regulatory Commission (CBRC) at the end of May 2016, which puts NPLs at RMB 1.4 trillion, or 1.75% of total bank lending, on the back of 18 consecutive quarters of NPL growth.<sup>54</sup> In fact, according to the IMF’s April 2016 GFSR, more than 15.5% of a total USD 1.3 trillion PRC corporate debt may be at risk of default.<sup>55</sup>

However, even these figures are disputed by credit-rating agencies, which place capital shortfalls for commercial banks at 11–20% of PRC GDP.<sup>56</sup> The information gap is in part due to two factors. First there is the matter of lending transparency and transparency of exposures when lending is sourced outside of the traditional banking system remains.<sup>57</sup> Moody’s Investor Services has estimated that, in 2015, China’s shadow-banking system accounted for nearly 80% of GDP.<sup>58</sup> The second related problem is that loans to the shadow sector are invariably mischaracterized as investments and thus, when they do not perform, they are not accounted as NPLs, which means any restructuring would not appear on balance sheets as loan workouts, even if the IMF’s recommendations about banks moving to an explicit recognition of corporate workouts are adopted.<sup>59</sup>

Either way, these are large figures even for the world’s largest economy and a continuous risk to the stability of the regulated sector. Thus, the government is addressing the mounting NPL and bad-debt problems through the adoption a multi-pronged strategy. First, for the debt related to/generated by state-implicit guarantees, it actively encourages mergers or bankruptcies of technically insolvent companies, introducing a debt-for-equity swap programme and allowing provincial governments to establish AMCs. With regard to steel and coal companies defaulting on their debt, the CBRC has issued draft regulations to set up a debt-to-equity swap programme. Each swap involves three

parties: the originator (creditor) bank, the SOE debtor, and a third-party executor. 60 Executors will consist of the big four banks, which will sell NPLs to AMCs. Upon receiving approval by the CBRC, distressed SOEs will exchange debt for equity, thereby strengthening their balance sheet at the expense of the purchasing bank's balance sheet, before being sold to the AMC. Effectively, the debt is retained by the government until disposed of by the AMC, while, with each transaction through the chain, the NPL's value is diminishing, spreading the risk among government agencies. Technically insolvent companies will be excluded from the programme. 61 The programme began its operations on 25 October 2016.

However, the success of this multi-pronged strategy is still unproven, for a variety of reasons. First, in practice, the transfer of NPLs to AMCs amounts to an expensive bailout of the four main banks and a shifting of bad debt from the provinces to the centre. Second, the suggested debt-to-equity swaps run the danger of keeping alive so-called zombie SOEs, 62 as the IMF calls them. These could accentuate the misallocation impact of debt overhang and deprive from new credit viable companies. Thus, the IMF's report on the recent PRC programme for NPLs suggests a robust test of corporate viability, which would have as an effect to push unviable SOEs to bankruptcy rather than artificially shoring them up through debt-to-equity swaps. 63 Of course, given the political clout exerted by SOEs, leadership and their regional government owners implementing the IMF suggestions in practice might prove a daunting task. Third, the debt-securitization solution may not be working due to a dearth of private buyers for bank NPLs, which means that sold assets end up with state-buyers or state-owned banks, essentially recycling rather than resolving the problem. 64

Finally, given the aforementioned structural problems that also create uncertainty about the true value of NPLs, such as the difficulty to enforce contracts especially against SOEs, the development of a true secondary market for distressed debt, as the IMF rightly suggests, may be unattainable for now. That would mean that the central government would eventually have to absorb AMC losses into its budget. Therefore, in the face of slowing growth and mounting public debt and with banks haemorrhaging deposits, which entirely rules out the possibility of implementation of a bail-in regime, PRC authorities have clearly to shift attention to the prevention of NPLs.

This shift in policy becomes ever more urgent given the rising volume of bad loans in the corporate sector, the escalating inability to serve them due to falling profits (Figures 1 and 2), 65 and the multiplication of housing loans granted by PRC banks in recent years. The latter have aided the significant rises in real-estate prices that clearly indicate a developing asset bubble in specific regional spots, rather than the country as a whole. 66 Even so, the impact on bank solvency of a fall in housing prices and a string of defaults due to the slowing economy is expected to be significant.

Figure 1 IMF 2016 Source: IMF Working Paper (2016)

Figure 2 IMF 2016 Source: IMF Working Paper (2016)

## 2.2 The Chinese Shadow-Banking Sector and Channels of Risk Migration to the Regulated Sector

### 2.2.1 Mapping the PRC Shadow-Banking Sector

There is a wide range of estimates about the size of the shadow-banking sector in China, depending on the definition and the kind of activity that should be included in the total. 67 The latest reports put it at around 80% of PRC GDP. 68 But there are doubts whether these moderate estimates are accurate due to lack of transparency. On the other hand, the PBOC has devised a key index: the Total Social Finance Statistic, which may provide an up-to-date measure of bank and non-bank financing, though it lacks in granularity. 69 Yet figures may still be exaggerated due to the entrusted loans phenomenon. These are in the main loans made by parents of non-financial firms to subsidiaries that are run through banks for legal reasons. 70 The banks are indemnified for the credit risk of the borrower by the non-financial firm. 71 The motive of those loans can be clouded. A large number of entrusted loans appear to be lent within a corporate group. 72 But some entrusted loans are funded by SOEs as a way of profiting from their ability to borrow cheaply and in large volume by on-lending the funds they obtain. It seems that all entrusted loans to non-affiliates are motivated by the pursuit of short-term profit and they surge at periods when the flow of credit from the regulated sector is restrained. 73

In principle, lending within a corporate group would not have to be considered as a shadow-banking activity and indeed most loans to affiliates are to support a member of the group rather engage in interest-rate arbitrage. 74 Yet loans to unrelated parties are on the rise, with large corporations using their stronger balance sheet to borrow money via Hong Kong banks to on-lend to smaller firms within China that face restricted access to PRC bank lending. 75

Overall, it is difficult to separate intra-group and extra-group loans to unrelated parties. 76 Moreover, even lending within the “group” in China may still be between entities that are only loosely connected and where the borrower may be allowed to fail without the failure of other members of the group. This classification problem leads to most calculations treating all entrusted loans as shadow-banking activity, even though this doubtless exaggerates the extent of shadow banking in China. At the same time, the true size of corporate on-lending may be grossly understated, as this activity is unregulated and unreported. 77

Another development that impacts on the measurement of the PRC shadow-banking system is the new wave of Internet-based providers of payment services 78 —essentially an integrated payment-collection service provided by the likes of AliPay and others, 79 initially funded by merchant fees. What brings Internet providers within the boundaries of shadow banking is that payment-service providers have leveraged their knowledge of users’ credit profile and they now offer Internet-based peer-to-peer (P2P) lending, 80 WMPs, and micro-lending to individuals and small loans to SMEs, alleviating the liquidity problems that the latter often face.

These firms are at the heart of the FinTech revolution that has disrupted the way that financial services are provided. 81 Given the vast chunks of data that Internet finance providers can control and mine, and the cheaper cost base compared to traditional banks, combined with the higher yields they offer, such a development may seem inevitable. But, as we see below, there are risks, especially with respect to P2P lending. Moreover, if FinTech firms do indeed grow to become the principal providers of retail funding, their systemic importance may increase very significantly.

### 2.2.2 Risks, Benefits, and Shadows

As already mentioned, Chinese shadow banking is largely the result of interest-rate and regulatory arbitrage, and is thus a system that remains dominated by banks, which use it to avoid capital requirements while making substantial returns on loans masqueraded as investment products or

other forms of financing that are classified as receivables. Elliott et al. calculate that perhaps two-thirds of business into shadow banking is effectively “bank loans in disguise,” where a bank is at the core of the transaction and takes the bulk of risks and rewards, but pays non-banks to participate in order to avoid regulatory constraints and costs. According to the same study, the other third is due to cost advantages that non-bank institutions enjoy because of relaxed regulatory constraints and their willingness to lend to smaller players.<sup>82</sup> Essentially, a very large number of shadow-banking transactions such as the already discussed private-wealth products, loans and leases by trust companies, entrusted loans, bankers’ acceptances, leasing finance, guarantees through specialized firms, and TBRs involve the mediation of banks, and could even become a claim on the banks, depending on the circumstances. For example, in certain securitizations, the bank may substitute it for due payments to avert reputation risk.

We explain below how, apart from the wealth products and TBRs discussed in the introduction of this article, other forms of shadow-banking activity can also create a long chain of interdependence and interconnectedness between not just shadow operators and regulated banks, but also between regulated banks themselves,<sup>83</sup> even though the exposure either does not appear on bank balance sheets or the risk of the transaction is not accurately reflected. These transactions expose regulated banks not only to the risk of counterparty insolvency, opening the gates for credit-risk migration to the regulated sector, but also to the risk of counterparty illiquidity that could, in the absence of a liquidity backstop, change into a generalized liquidity shock.<sup>84</sup>

In the next few paragraphs, we identify specific shadow-banking operations and practices that are particularly responsible for the generation of links of interconnectedness between the regulated and the shadow sector.

### 2.2.3 Interconnectedness, Credit-Risk Migration, and Liquidity (Refinancing) Risk

Trust loans and leases are financial transactions undertaken by trust companies—a separately regulated type of firm that combines elements of banks and fund managers. Before a recent tightening-up of the rules of their operation, trust companies had wide latitude to operate across the financial sector. The key question in this case is how the trust company has sourced the loans it provides. If the money comes from the banks and the trust company is merely performing interest-rate arbitrage or acts as a bank subsidiary, there is ample scope for credit and liquidity-risk migration, though such (contingent) exposures may not be reported.

Bankers’ acceptances are certificates issued by banks that promise unconditionally to make a future payment, usually within six months, and are generally backed in part by a deposit from the party desiring the bankers’ acceptance to be issued. In a way, they are no more than a certificate of deposit used to back commercial transactions such as purchases of inventory, where the seller receives the acceptance as a substitute to cash collateral. Acceptances are negotiable and may be sold by the holders at a discount rate prior to the maturity date, often back to the issuing bank. The fact that the acceptances are transferable can lead to multiplication of transfers of the same acceptance, transforming a modest deposit into a much larger one. Thus, borrowers can create money-multiplication spirals by using the acceptance to obtain a loan based on the discounted value of the acceptance and then use these funds to make a new deposit to back a further, larger acceptance. In this way, “acceptances” build leverage in the financial system and the economy, since the initial deposit has gradually turned into a large, off-balance-sheet loan from a bank. Since acceptances can be used as quasi-money, this practice leads to the formation of a parallel system of

fractional reserve banking whose net exposure is hard to calculate, as it would require concurrent netting and set off of all acceptances.

Interbank entrusted loan payments: these are loans that one bank makes to another bank's client on the second bank's behalf. As the entrusted payment matures, the first bank will receive principal and interest paid by the second bank. Naturally, this form of financing creates large levels of interconnectedness, making the first bank totally dependent on the solvency and liquidity of the second bank and not merely of the borrower.

Guarantee companies participate in shadow-banking activities first by having as their core business the provision of financial guarantees, transferring the credit risk to the guarantee firm to reduce capital requirements for banks that make such guaranteed loans to the shadow-banking sector. Second, many guarantee companies make direct loans themselves, lacking a licence to do so. This practice increases interconnectedness between regulated banks and the shadow sector. As the final health and robustness of guarantee companies are unknown and it is unclear how they manage their exposures, any concurrent call on their guarantees, in the event of a string of defaults, will probably mean collapse of the guarantee companies and risk repatriation for the bank that tried to offload risk by using the guarantee, weakening its financial base.

Inter-bank market activities act as a substitute for formal deposits using the inter-bank market, although the majority of participants are not banks, but large corporations using finance-company subsidiaries to participate. Under such arrangements, corporations can lend money to banks in deposit-like arrangements without being subject to the caps on deposit rates and without forcing banks to incur many of the regulatory costs of deposits, such as triggering the minimum-reserve requirements. However, any temporary withdrawal of such "loans" can cause a refinancing risk in the regulated sector, leading to calls for LoLR support.

Furthermore, the regulated sector may maintain invisible links with the shadow-banking sector, creating interconnectedness and channels for migration of liquidity and bankruptcy risk. In particular, the already discussed WMPs, which are predominantly short-term, 85 can be the perfect conveyor belt for repatriating bankruptcy risks to the regulated sector and not necessarily through contractual or other explicit legal links, 86 but even more likely through the contagion triggered by reputation risks and loss of confidence. 87

Another invisible, in principle, risk-transmission channel relates to P2P-lending platforms and it is much less debated than the widespread frauds perpetrated by P2P operators in the first few years of the emergence of these platforms. 88 P2P platforms in China currently operate under three models. 89 First, the platform is used to simply match lending and borrowing information. Second, the platform may be supported by operator (or its affiliates) guarantees or credit-enhancement facilities or may merely sell such products. Third, the platform may offer repackaging and sale-of-credit assets through securitization and other financial-engineering techniques, whereby the P2P platform issues "WMPs" to raise money for purchasing credit assets from affiliates of P2P platforms. Fourth, the platform may facilitate the transfer of credit assets created by its operator or its affiliates to end investors—whereby the P2P platform or its affiliates extend certain loans to borrowers first and then sell these loans through the P2P platform to end investors.

The second, third, and fourth models amount to the provision of straightforward credit-intermediation services and, similarly, the third and the fourth form of P2P platforms may also offer covered or uncovered loans. Interconnectedness could be further accentuated if P2P platforms are used to sell bank-credit assets. In addition, the four types of P2P business models involve liquidity

risks, as there may be liquidity mismatches if the platform takes in short-term investments from clients on a rolling basis to fund long-term assets in the pool. In this case, any confidence crisis may spill over to the regulated sector, even if there are no explicit and implicit links between the P2P operator and regulated-sector institutions.

Thus, it is paradoxical that the P2P platforms that intermediate credit, rather than just matching interested borrowers and lenders, are not licensed/regulated like banks. Simply put, the mere imposition of capital requirements on P2P operators is possibly insufficient, as it is unclear whether the practice of P2Ps' extending loan guarantees and loan securitizations has abated even after the requisite prohibition of these activities in November 2016. 90

Another development that may link Chinese banks with lending channelled through the shadow sector is the emergence of so-called "directed asset management plans [AMPs]." The new shadow channels work like trusts, with a bank investing proceeds from its WMPs in a directional plan that then lends to a borrower chosen by the lender. This extension of credit can circumvent restrictions on certain borrowers, like local government financing vehicles, as well as capital requirements. The amount of money placed in such products jumped by 70% last year to RMB 18.8 trillion (USD 2.9 trillion), outpacing the 17% growth for trust assets, according to data provided by industry groups. 91

Finally, the rise of money-market funds (MMFs) like the aforementioned Yu'e Bao is not free of concern and systemic stability implications. As discussed, given the close connection between China's banking and non-banking credit sectors, it is not surprising that nearly 90% of Yu'e Bao's portfolio consists of bank deposits, short-term debt paper issued in the inter-bank market, and cash deposited with depositary and clearing agencies which settle and clear money-market instruments.

While limiting their participation in securitization deals and other money-market instruments, many other MMFs also invest the majority of their portfolios with banks to earn more interest. This is because MMFs' deposits are not subject to the aforementioned interest-rate caps and thus banks can offer MMFs a relatively higher interest rate, in particular at times when the inter-bank market is short of liquidity. In fact, some investors may have withdrawn their bank deposits to invest with MMFs in order to obtain a higher return. 92

MMFs are a classic example of how the liquidity (and credit risks) borne by the shadow operators may migrate to the regulated sector. Chinese MMFs typically have a constant net asset value (NAV). 93 But an MMF's constant NAV may not reflect the real value of the MMF when the number of redemption requests is significant, since, in such a case, the MMF would be required to fast realize its investments (at possible discount prices) to meet the cash payout requirement. This redemption structure poses a liquidity risk for the regulated sector as well as the MMFs themselves. MMFs currently place the bulk of their portfolios with banks either as deposits or with the short-term bank paper. Moreover, funds placed in other (than deposits) money-market investments are maintained in the same pool. Yu'e Bao and many MMFs offer T+0 redemption for any amount not exceeding a specific threshold.

Even setting aside the real risk of firesales to meet a sudden surge of repayments/redemptions, a large MMF investor exit during any panic scenario, such as when they realize that the value of their investments in MMFs is far from guaranteed, can create a sudden withdrawal of MMF deposits from commercial banks to cover their liquidity needs. In these cases, MMFs can transfer unexpected liquidity shocks to the regulated sector. The best example of an MMF investor panic is the US Reserve Primary money-market fund debacle—the so-called "break the buck" incident. 94

Therefore, systemic risk may increase due to MMFs' higher susceptibility to "runs," because they present a significant retail investor base and, at the same time, investors treat their investments with MMFs like principal protected deposits (as a result of constant NAV and T+0 redemption features).<sup>95</sup> One solution for the risks that MMFs pose would be to adopt a floating NAV, since the fund's assets are also floating at redemption. Another is to impose generalized "gating" restrictions at the discretion of the fund's management. In fact, both measures should be adopted to stabilize the PRC MMFs even if they lose business. However, above all, what ought to be done is interest-rate liberalization to make bank deposits more competitive vis-à-vis MMF products.

## 2.3 PRC Regulatory Architecture for the Financial Sector and the Reform Debate

### 2.3.1 Overview

China follows a silo approach to financial regulation, which has drawn a fair amount of criticism.<sup>96</sup> Since 1993, China's nascent financial sector was regulated by the PBOC, the central bank of China, which, in addition to monetary-policy powers, had the competence to formulate and implement fiscal policy, and to regulate and supervise the banking industry.<sup>97</sup> Following the amendment of the Commercial Banks Law in 2003, the banking supervisory and regulatory responsibilities of PBOC were transferred to the China Banking Regulatory Commission (hereinafter "CBRC"). The move to create specialized regulatory bodies under the State Council in 2003 (the "three agencies one bank" system) signalled the Chinese government's intention to modernize and consolidate regulatory structure in the financial sector by developing expert regulators. The PBOC remained the central bank and could still exercise considerable regulatory power over all financial institutions in China in order to maintain the overall stability of financial markets. It also retained monetary-policy competence, acting as LoLR.

The CBRC's remit includes banks, financial-asset managers, trust and investment companies, and other depositary financial institutions. Its responsibilities include approving new banking licences, formulating prudential rules, and conducting compliance examinations. It also formulates supervisory rules governing the banking industry. The China Securities Regulatory Commission (CSRC) regulates and supervises the securities and futures markets, and enforces sanctions. The China Insurance Regulatory Commission (CIRC) regulates the insurance industry. It should be noted that the sectoral regulators do not enjoy hierarchical independence in the same mode as Western regulators, even if they enjoy operational independence. Rather, they are parts of the wider public administration machine and are often headed by career bureaucrats.

The sectoral regulators produce so-called second-tier laws consisting of administrative rules and regulations enacted by the State Council, the highest administrative authority of China. The third tier consists of CBRC's Guidelines, notices, and rules. Most of CBRC's regulatory initiatives fall into this category. In general, the third-tier regulatory initiatives serve as the base of China's banking regulations and deal with contemporary regulatory issues.

### 2.3.2 Responsibility for Financial Stability and Fractured Monitoring Lines

Although overarching responsibility for financial stability resides with the State Council, the highest executive authority, the Law of the People's Bank of China as amended in 2003, gives the PBOC

responsibility to guard against systemic financial risk and maintain financial stability.<sup>98</sup> During the global financial crisis (GFC), responsibility for financial stability was exercised by a high-level committee of key financial agencies, which was established to regularly assess conditions and consult on policy actions. Each of the agencies had contingency plans in place to respond to a crisis, including memoranda of understanding (MOUs) to promote co-operation. The efforts of Chinese authorities to rapidly deploy a range of macroprudential measures to cool off overheating property markets was testimony to the strong administrative capacity of the State Council and its ability to respond to near-term systemic threats. But, from an operational perspective, responsibility for financial stability is largely taken by the four agencies, though the centre-piece in this sometimes unwieldy institutional jigsaw is the PBOC. The Law on the PBOC specifically charges the bank with responsibility to guard against systemic financial risks and the maintenance of macro-financial stability. In addition, the PBOC implemented the Deposit Insurance Act in May 2015<sup>99</sup> and various macroprudential policy tools. In particular, the PBOC put in place a Macro Prudential Assessment framework (e.g. differentiated reserve requirements) to guard against systemic risk. Moreover, the PBOC takes the lead in enhancing inter-agency co-ordination through the Financial Crisis Response Group directly under the State Council and the Financial Regulatory Coordination Joint Ministerial Committee (JMC).

Other government agencies, outside of the sectoral regulators that may have a role in safeguarding financial stability, are the Ministry of Finance, whose responsibilities include, inter alia, debt issuance and the management of state-owned assets, and the State Administration of Foreign Exchange, which has custody of foreign exchange reserves. Together, these two agencies provide the government with very substantial “financial backstops.” Currently, inter-agency co-operation and information-sharing in China are underpinned by a series of MOUs between the CSRC, CBRC, and CIRC. The PBOC also has developed Interim Rules on Information Sharing with the three financial regulators. In late 2013, these financial regulators set up a joint financial-stability co-ordination mechanism. Formal quarterly Joint Working Meetings of the regulators and joint reviews of financial intermediaries are held on a periodic basis. In addition, the Investor Protection Bureau was established in the PBC, CSRC, CBRC, and CIRC to strengthen the co-ordination of investor protection.

The institutional separation of functions among the PBC, CBRC, CSRC, and CIRC keeps, in theory, each institution’s focus on its mandate, helping to keep them accountable. In addition, the lack of institutional integration avoids creating a single dominant entity that over-concentrates powers and might miss key risks or fail to take important action due to “groupthink”—an accusation validly launched against the former single regulator in the UK, the Financial Services Authority (FSA). A key lesson of the GFC, however, is that inter-agency co-operation must be equally effective in normal periods, so that any build-ups of risks can be identified and addressed well before they evolve into a systemic event. In other words, an effective macroprudential policy framework is one in which financial agencies not only share their concerns on emerging risks, but also work closely together to prevent them.

China has made progress in improving its institutional arrangements for co-ordination in regulating the financial system during the past decade. Despite these steps, there remain gaps and regulatory overlaps. It is not clear that the existing protocol would always provide each agency with speedy access to the information from other sectors that is needed to assess the overall soundness of the financial systems. This is an important issue because legal hurdles and obstacles to information collection and sharing among agencies have proved to be major impediments to the early assessment of systemic risks in many countries.



With Circular No. 107/2013, PRC authorities clarified regulatory responsibility for the shadow-banking sector adhering to the sectoral or silo approach. 100 But this approach is clearly flawed both vis-à-vis firm and product regulation multiplying oversight fragmentation with some products like WMPs being assigned to multiple regulators and innovative markets trading securitized debt having no clear regulator. 101 The most important risk of such fragmentation of oversight is, of course, that systemic-risk nodes and channels of interconnectedness between the shadow and the regulated sector may go unnoticed.

There are other key weaknesses in the silo approach. First, as the Financial Stability Board (FSB) notes, there is insufficient collecting and sharing of cross-sector granular data, which is a key shortcoming, since China has not established a national, credible data-collection system to gather more granular data. Second, there is insufficient cross-sector analysis on systemic risk. The PBOC devotes considerable resources to financial stability and publishes a comprehensive annual Financial Stability Report (FSR). But, as the FSB report notes, the FSR should include more analysis of the interconnectedness across sectors and markets in depth to explore the potential sources of risks. The key financial-stability issues should be discussed in depth to replace the list of financial developments and risks. Moreover, room exists for improvement in the comprehensive surveillance of systemic risk. 102

Third, there is insufficient policy co-ordination. Several characteristics of the economy, financial sector, and policy framework in China make policy co-ordination a particularly important tool. For instance, the interest-rate policy is constrained by the relatively inflexible exchange-rate regime, as well as the gradual opening of the capital account. Fiscal policy—particularly government spending—also has limitations as a countercyclical tool. It is not always flexible enough to prevent credit booms and the build-up of systemic risk in the financial sector. 103 Moreover, the importance of real estate as a major asset class for retail investment, 104 the fact that underdeveloped financial markets provide limited risk-management tools, and the shortcomings in crisis-resolution frameworks highlight the need for policy co-ordination to identify and monitor systemic risk in the financial system. This is also the key theme of the FSB's most recent peer review of the PRC financial system. 105

As part of the reform debate and in order to streamline financial-sector regulation, several ideas have been mooted, including proposals for the creation of a super-agency for financial regulation placed under the PBOC. The super-agency is planned to co-ordinate monetary and financial supervisory policies and information-sharing between these regulators and to supervise legislation, without changing the roles of the incumbent institutions. Other ideas that have also been floated include the creation of a macroprudential council. 106

In our view, super-agencies have at best a mixed record. 107 Yet the observations above about inter-agency co-operation and information-exchange arrangements significantly strengthen the argument that the PRC needs a regulatory “big bang.” This in our view should see the current silo approach replaced by a system that integrates the process of monitoring of financial-stability risks, microprudential risks, and investor-protection risks (and enforcement) without resorting to the establishment of a single mega-regulator—a solution that would carry serious shortcomings. For this reason, we suggest a configuration of PRC regulation along regulatory objectives that would be premised on the mixed approach rather than sticking to either the functional or institutional method of regulation. Our proposal model reflects a “twin-peaks”-plus model and it comes closest to the UK financial architecture, discussed in Section 3 below, although we envisage the macroprudential body as one with the power to order directly the different parts of the regulatory and financial system. In this context, we envisage that the augmented CBRC would become a microprudential regulator for

the entire financial sector, with a merged CSRC and CIRC as conduct, market-abuse, and consumer-protection regulator.

In addition, the gaps in information-sharing necessitate the establishment of a body with overall responsibility for macroprudential policy in the PRC and binding powers and not just a cross-agency or even supra-agency monitoring mechanism, since the current arrangements in the PRC can easily open fractured lines. 108 Thus, our model also includes a macroprudential body with full enforcement powers that sits within the PBOC (for the full proposal, see Section 5 below). An approach to financial regulation based on regulatory objectives like the one described above that would break down the silos would also offer regulators a much better idea of cross-sectoral connections and risks, including an accurate mapping of bank exposures in the shadow-banking sector. This way, regulators could gain a thorough view of shadow-banking risks. In addition, the consumer-protection body could pursue investor-protection infringements against both authorized and non-authorized persons. Finally, breaking down the silo approach would mean much less inter-institutional rivalry and turf wars that normally result in the blocking of important reforms.

### 3. A MACROSCOPIC VIEW OF DEVELOPMENTS IN REGULATORY ARCHITECTURE AND LEVERAGE RATIOS IN THE US, EU, and UK POST 2008

#### 3.1 The Reform of Regulatory Architecture

Prudential regulation has undergone seismic changes in the post-2008 period, at least in the US, EU, and UK, as a result of the so-called GFC. The new prudential regime is increasingly shaped up at the global (Group of 20 (G-20), FSB) or the regional level (the EU) or driven by developments in key jurisdictions (e.g. the US). Gradually, the regulators' armoury expanded to include, apart from licensing and ongoing compliance requirements, widened deposit-insurance schemes, ex ante recovery, and resolution planning 109 for financial institutions, including banks, revamped corporate governance and remuneration standards, and a radically reconfigured structural framework. In addition, capital requirements have been overhauled and new liquidity requirements have been introduced.

The post-2008 prudential regime is complemented by an expansive and intrusive recovery and resolution framework, which aims to eliminate, or at the very least drastically reduce, the possibility that a financial institution becomes too big to fail. Where resolution and prudential regimes overlap is in the area of early intervention, so-called prompt corrective action (PCA) (pre-insolvency regimes). Moreover, new ideas have been implemented to further shore up bank capital to either keep a failing bank as a going concern through prompt recapitalization or resolve it in an orderly manner, in order to put an end to bank access to public funds. This approach is supposed to eradicate, to some extent, the moral hazard that is normally associated with bailouts. As such, a new class of contingent capital instruments (so-called CoCos) 110 was introduced. These may be converted into equity to shore up bank capital before the bank enters into resolution, thus avoiding having to push banks through disruptive resolutions. In addition, a certain portion of bank liabilities may be used to restore a failing bank to health under the new bail-in process introduced under Title II of the Dodd-Frank Act 111 in the US, the Bank Recovery and Resolution Directive (BRRD) 112 in the EU, and the more recent Total Loss Absorption Capacity (TLAC) requirements. 113

Critically, a new approach to prudential regulation was introduced—so-called macroprudential regulation. Under this framework, regulators have responsibility to look at the resilience of the financial system as a whole and the way it interacts with the wider economy, including the possible formation of asset bubbles, since the latter, normally, have deleterious effects on financial stability. In this context, a number of new measures such as leverage ratios, countercyclical capital requirements, and lending controls (like loan-to-value and loan-to-income ratios) have both a micro- (institutional stability) and a macroprudential objective (systemic stability). This is a very important development. Goodhart has accurately suggested that central banks have always had this dual role: maintaining price stability and financial stability. 114

### 3.2 Revamping Bank Supervision and the Question of Optimal Regulatory Architecture

Broadly speaking, there are three approaches to structuring the supervision/regulation of the financial sector: the institutional approach, the functional approach, and the objectives-based approach. In practice, financial supervision and regulation can be organized as a combination of these three approaches. 115 The institutional approach means that the regulator is essentially focusing on the supervision of individual institutions. This approach is regarded as very apt for the regulation of banks. 116 Its distinct advantage is that regulatory overlaps and turf wars are avoided and there is a single public agency to hold accountable in the event of regulatory failure. On the other hand, disintermediation, diversity of activities, technology, and financial innovation are gradually rendering ineffective regulation that runs along institutional lines.

As discussed below in Section 3.3, in the case of China, breaking down regulatory silos is a very important factor in terms of regulatory ineffectiveness. A better integrated and co-ordinated model of regulation with clear lines of functional responsibility, especially vis-à-vis financial stability and conduct/consumer-protection regulation, would necessarily have to look at the challenges that shadow banks pose in both respects.

The functional approach focuses on the kind of business undertaken by financial firms. In principle, the functional approach provides three main benefits: (1) regulatory neutrality; (2) a level playing field: the regulator applies the same rules to all regulated firms that perform the same activity; and (3) it allows firms to select the precise services they wish to offer and, thus, it best supports financial innovation. 117 An important limitation of the functional approach in this era of complex and interconnected global markets is over-specialization, where the overall state of the regulated institution escapes regulatory attention. 118

In practice, the two approaches are complementary. Goodhart et al. have argued that a strict dichotomy between the institutions- and functions-based approaches is misleading. 119 Financial institutions need to be regulated both in order to safeguard their safety and soundness and to make them uphold the highest standards in the way they conduct their business and treat their customers. 120 Given the financial-stability externalities created by the operation of financial institutions and especially by banks and the market failures—and often sharp practice that, on occasion, borders on fraud—pervading banks' dealings with consumers, the mixed approach is the better argued and more justified one. In addition, the mixed approach also allows for competitive regulatory neutrality, securing a playing field for prudential regulation and equitable treatment of firms when it comes to compliance with the conduct of business regulation.

The most adaptable form of the mixed approach is the objectives-based approach under which financial intermediaries and markets are subject to oversight and scrutiny by more than one

authority, each of which is responsible for one objective of regulation regardless of the legal form of the regulated intermediaries and/or of the activities they perform. The aim is to create a structure that reflects the objectives of regulation and, at the same time, it promotes those objectives most effectively and efficiently.

An example of the objectives-based approach is the twin-peaks structure advocated by Taylor in 1995, which comprised two regulatory agencies: one responsible for ensuring the soundness of the financial system and the other focusing on consumer protection.<sup>121</sup> The most important criticism levelled against this model was that the number of regulators seemed to depend on the view that each must have only one objective, but investor protection and systemic-risk oversight are not easily separable.<sup>122</sup> The alternative would be consolidating all financial regulation within a single agency. Until 2008, two discernible structures underpinned bank supervision. The first divided responsibility for prudential regulation and the second concentrated all regulatory/supervisory powers for the financial sector within a single institution—a mega-regulator. In the UK, all prudential and conduct regulation was entrusted to a single mega-regulator, in the case of the UK to the FSA. But, even where prudential regulation was entrusted to a single agency or a constellation of agencies independent of the central bank, the central bank still had some role in prudential regulation.<sup>123</sup> It would have a large hand in supervising the payments system, it would be in possession of important information for prudential regulation, and it would be the body that, in a crisis, would make available LoLR facilities.

The lessons drawn on the GFC experience have also profoundly affected the style of bank regulation/supervision. A key conceptual distinction that reflects recent regulatory practice is that between microprudential and macroprudential regulators. Most of the post-reform microprudential regulators are either parts of a central bank or a wholly owned subsidiary of the central bank. In general, central banks have acquired a mandate to protect financial stability and act as macroprudential supervisors<sup>124</sup> or, at the very least, as the dominant part of new macroprudential bodies.<sup>125</sup> Financial-stability powers/competences given to key central banks are in addition to the exercise of their powers as monetary authorities. For example, the current mission of the Bank of England is to promote the good of the people of the UK by maintaining monetary and financial stability, the latter being the objective of the UK's macroprudential supervisor, the Financial Policy Committee. The obvious exception to this trend is the US, where the systemic-risk regulator, the Financial System Oversight Council, established under Title I of the Dodd-Frank Act, is a more pluralistic body in terms of composition and membership,<sup>126</sup> being chaired by the Secretary of the Treasury and housed at the US Department of the Treasury.

Arguably, post-2008 regulatory/supervisory structures in key Western jurisdictions (Eurozone, US, UK) look like the twin-peaks (plus). Moreover, central banks, such as the US Federal Reserve Board (FRB), have seen their role as microprudential regulators strengthened or, like the Bank of England, they have resumed their role as prudential regulators. Thus, FRB's primary objective is, *inter alia*, "evaluation of the overall safety and soundness of a banking organization."<sup>127</sup> Similarly, the primary objective of the UK's Prudential Regulation Authority, a subsidiary of the Bank of England, is to "promote the safety and soundness of the firms it regulates."<sup>128</sup>

### 3.3 Introduction of a New "Generation" of Leverage Ratios

#### 3.3.1 Overview

## a) The Impressive Return

Discarded as too blunt since the early 1980s, today leverage ratios have made an impressive and largely unopposed return and not just as a supplement to risk-weighted capital requirements (RWAs), but also a regulatory requirement that has to be complied with regardless of the RWA indicators. The reasons for this return are manifold and are not limited to the fact that bank-equity levels in the wake of GFC were exceptionally thin, necessitating a string of costly bailouts. Four other factors have been as important. First, all-encompassing leverage ratios that catch off-balance-sheet exposures are more representative of banks' overall risk profile and capital position. Second, the world is in revulsion with high debt following the GFC and the Eurozone crises. Third is the universal acceptance of Hyman Minsky's ideas about the nature of the financial system and its role in the real economy, especially when debt levels become unsustainable, triggering a chain of defaults. Fourth is the experience of the GFC and ensuing research on the role of the financial sector as an agent of instability. This shifted regulatory attention from the level of individual financial institutions (microprudential regulation) to a systemic level (macroprudential regulation).

## b) The Key Questions of Definition and Ambit: Is There an Optimal Leverage Ratio?

Bank-capital requirements are a key tool in regulators' armoury because bank capital can serve several key functions, including being used as a cushion for absorption of bank losses, as risk restraint, and as a market-monitoring and discipline mechanism. On the basis of these assumptions, bank failures should be a very rare phenomenon in the era of Basel Capital Accords. However, flawed capital structures were one of the most decisive factors in the string of bank failures that we witnessed during the GFC. Beyond the impact of high debt on creditor (including banking counterparties) confidence, excessive leverage influences shareholder preferences and bank-manager behaviour, giving rise to so-called leverage-agency costs.

In general, there are three types of leverage: (1) "balance sheet," (2) economic leverage, and (3) embedded, respectively based on balance-sheet concepts, market-dependent future cash flows, and market risk. Balance-sheet leverage is the most recognized form, as it is the most visible. It measures the ratio by which the value of a firm's assets exceeds its equity base. Banks typically leverage themselves by borrowing to acquire more assets, with the aim of increasing their return on equity. Economic leverage means that a bank is exposed to a change in the value of a position by an amount that exceeds what the bank paid for it. Finally, embedded leverage refers to holding a position that is itself leveraged. There is no single measure that can capture all three dimensions of leverage simultaneously. As a result, the EU Capital Requirements Regulation has provided a binding definition of what constitutes leverage, which firmly extends to balance-sheet and economic leverage, and catches embedded leverage only by implication and to the extent that measuring an institution's embedded leverage is possible.

Issues of definition and scope blighted earlier attempts to regulate banking via leverage ratios. The chief example was the US ratio, which totally failed to capture the perilous state of the US banks in the period before the collapse of Lehman Brothers in September 2008. The reason for that was that, prior to the GFC, the US required its banks to report on a simplified leverage ratio, based on banks' Tier 1 capital ratio and their total on-balance-sheet risk-weighted assets (RWAs). Banks engaging in a spate of asset substitution and securitizations could easily meet the Basel Risk-weighted requirements, while they remained perilously leveraged. The proven ineffectiveness of leverage

ratios that focused on on-balance-sheet exposures and the perceived superiority of risk weights as a measure of bank exposures meant that the earlier debate on bank-leverage ratios was largely dismissive of their actual merits.

### c) The Question of Ratio Calibration

There are many good reasons why common equity is regarded as a superior form of bank capital. Among the most important is the fact that equity is perpetual and thus irredeemably anchored to the solvency of the bank for the duration of its life as a going concern. In addition, it ranks last in the event of insolvency, and is capable of being used to absorb bank losses. Also, higher amounts of equity capital improve bank governance in two ways. First, higher levels of equity control shareholders' preference to maximize risk and return by taking on more debt and curb their willingness to lend to risky projects. Thus, equity funding of bank assets lowers bank-governance costs. One of the most important questions surrounding capital regulation is how much bank capital is enough. An important factor that makes this question exceedingly complex is that banks, unlike other corporations, are not just allowed to use as "own funds" broader equity capital, including capital reserves and retained profit, but also serious amounts of convertible debt. A large number of commentators agree that bank capital should not just account for possible bank losses on some abstract weight-based ratios of asset riskiness, which is the fundamental rationale of Basel standards. It should also be a means to contain banking's externalities and thus it should target those parts of the system that generate the highest amounts of risk either on their own or due to interconnectedness, accounting thus for the social cost (externalities) of bank failures.

How much equity capital banks require is not an easy question to answer. *Prima facie*, there is a trade-off between business efficiency and bank safety. Yet the view that bank equity is more expensive than debt has strongly been disputed in a classic work by Admati et al.<sup>137</sup> Their view is corroborated by other studies (and by historical experience), which find that, due to the social costs involved in their operation, banks must hold much higher levels of capital than banks have held so far and higher than the Basel requirements.<sup>138</sup> Admati et al. (2011/revised 2013) suggest that a Tier 1 equity ratio of 20–30% over unweighted assets would be socially optimal. Miles et al. similarly argue for unweighted capital ratios of up to 20%.<sup>139</sup> Their argument for higher (equity) capital requirements is twofold: (1) to reduce the probability of a public bailout and thus reduce the exposure of taxpayers and (2) to reduce incentives for managers to take excessive risks (and play games with risk). In fact, they make a clear distinction between costs to individual institutions (private costs) and overall economic (or social) costs. They estimate the long-run costs and benefits of having banks fund more of their assets with loss-absorbing equity capital. The benefits are related to the reduction of the chance of banking crises, which generate substantial economic costs. The offset to any such benefits comes in the form of potentially higher costs of bank intermediation (e.g. higher lending rates or lower savings rates). They find that the amount of equity capital that is likely to be desirable for banks to use is very much larger than banks have used in recent years and also higher than targets agreed under the Basel III framework.

Unsurprisingly, as the theoretical debate about an optimal ratio remains inconclusive, this pluralism is also reflected in recent measures across key G-20 jurisdictions aiming at the adoption of binding leverage by their banks. The Basel III Accord requires banks to have a minimum of 6% Tier 1 capital (comprising 4.5% common equity and retained earnings). In an attempt to counter the effects of inadequate disclosure of banks' capital positions, the BCBS also requires, as a backstop, that banks operate with a minimum leverage ratio of 3%.<sup>140</sup> Any bank with an unweighted leverage ratio of

less than 3% will be deemed to be undercapitalized, although full implementation will not be achieved until 2018. The distinction between the two measures is that leverage ratios strip out the effects of risk-weighting models, and the ratios are calculated using the tightened definition of capital required under Basel III. The ratio is designed to place a limit on the capacity of banks to leverage their capital base and to provide safeguards against possible RWA modelling error. 141

### 3.3.2 A New Wave of Bank-Leverage Ratios

Partly due to the extended implementation timescale of the Basel III ratios and partly due to the fact that the Basel III leverage ratio of 3% of non-weighted assets is arguably very low, important financial centres have drawn up their own plans for imposing a leverage ratio. Many have chosen to go substantially higher than the Basel III 3% ratio. 142 The Federal Reserve was required to establish the enhanced risk-based and leverage capital requirements for “covered companies,” namely bank holding companies with total consolidated assets of at least USD 50 billion and non-bank financial companies that the Financial Stability Oversight Council has designated for supervision by the FRB. 143 Banks and other financial organizations are required to report to the market and regulators on their leverage ratio at regular intervals under the PCA regulations. Given the striking failure of the previous American leverage ratio to warn of impending disaster, mostly because off-balance-sheet exposures went unnoticed, the Dodd-Frank Act has adopted a more sophisticated approach to bank-leverage measures.

The leverage ratio itself for all banking organizations is set at 4%, 144 although certain large banking organizations are subject to a lower leverage ratio if they utilize the advanced internal ratings-based (IRB) approach to RWAs, which requires them to have a minimum total leverage exposure of 3%. 145 However, a further supplementary rule has been introduced to cover the largest and most interconnected bank holding companies (BHCs), defined as those with more than USD 700 billion in consolidated total assets, or USD 10 trillion in assets under custody (covered BHCs). These banks would be required to maintain a Tier 1 capital leverage buffer of at least 2% above the minimum supplementary leverage ratio requirement of 3% (for banks which use the advanced IRB approach), for a total of 5%. Insured subsidiaries of BHCs (“Insured Depository Institutions”) must maintain at least a 6% supplementary leverage ratio to be considered “well capitalized” under the agencies’ PCA framework. 146 Failure to exceed the 5% ratio would subject covered BHCs to restrictions on discretionary bonus payments and capital distributions. This rule would currently apply to the eight largest and most interconnected US banks, although it will not be implemented in its entirety until January 2018. Furthermore, there are additional requirements for leverage restrictions in times of crisis. 147

The Canadian “assets to capital multiple” is a rather comprehensive leverage ratio, because it also measures economic leverage (to some extent). It is applied at the level of the consolidated banking group by dividing an institution’s total adjusted consolidated assets—including some off-balance-sheet items—by its consolidated (Tier 1 and 2) capital. Under this requirement, total adjusted assets should be no greater than 20 times the capital, although a lower multiple can be imposed on individual banks by the Canadian supervisory agency, the Office of the Superintendent of Financial Institutions (OSFI). This is more conservative than the previous US incarnation of the leverage ratio—and the inclusion of off-balance-sheet items strengthens the ratio even more. Indeed, the stringency of Canada’s leverage ratio has been cited as one factor—along with sound supervision and regulation, good co-operation between regulatory agencies, strict capital requirements, and

conservative lending practices—contributing to the strong performance of its financial sector during the financial crisis. 148

In 2008, the Swiss regulator FINMA (Financial Market Supervisory Authority), in strengthening capital-adequacy requirements, introduced a minimum leverage ratio under Pillar 2 of Basel II (supervisory review) solely for the country's two biggest banks: Credit Suisse and UBS. 149 The Swiss leverage ratio is based upon the Basel III definition of Tier 1 capital as a proportion of total adjusted assets and is set at a minimum of 3% at the consolidated level and 4% at the individual bank level. 150 In fact, the Swiss government had considered raising the leverage ratio up to 10%—naturally attracting the wrath of the Swiss banking industry 151 —because it regarded the current 4% ratio as inadequate.

The UK's Bank of England has announced a new leverage ratio, which will be binding on all banks regulated by the Prudential Regulation Authority (PRA) by 2018. 152 This followed on from work done by the Independent Commission on Banking (chaired by Sir John Vickers), 153 which recommended that large UK ring-fenced banks ought to be subjected to a supplementary leverage ratio of approximately 4%. 154 Accordingly, the important UK banks may have to comply with a minimum total leverage ratio of 4.95%, although this would only occur if the maximum CCB had been activated under the Basel III system. It is perhaps noteworthy that, notwithstanding these increases in the leverage requirement, there has been widespread relief amongst the UK banking industry that tougher regulations were not imposed. 155

#### 4. THE LEVERAGE CYCLE, LEVERAGE RATIOS, AND ECONOMIC GROWTH IN THE PRC

##### 4.1 The Leverage Cycle—Nature and Consequences

The dynamic feedback properties of leverage, volatility, and asset prices form the so-called leverage cycle. Market participants tend to behave in a pro-cyclical fashion and the capacity to leverage balance sheets permits them to engage in greater speculation on asset prices than unleveraged investors, if speculation is the principal motive behind their decision to borrow and their equity losses in the event of a gamble going badly are lower-than-expected payoffs. 156 The leverage cycle has been examined closely in recent years, especially in the post-2008 period. 157 One of the most worrying characteristics of the leverage cycle is that, while the risks it creates do seem Gaussian, they can also give rise to fat tails. This means that planning a protection scheme against such rises may not always be viewed as a priority, as associated risks will probably be seen as negligible. Moreover, as leverage is cyclical, so is the rise and fall of asset prices. 158

The most important risk associated with leverage is the speed of deleveraging in a downturn. Thus, it may often prove difficult to prevent a “leverage cycle crash,” 159 which critically will lead to increased margin calls (so-called “margin calls spiral”) and probably to an evaporation of liquidity and a credit crunch. 160 While the credit cycle should not be confused with the so-called “leverage cycle,” 161 the signature of the leverage cycle is also rising asset prices in tandem with rising levels of indebtedness, followed later by falling asset prices and deleveraging. Accordingly, one of the most destabilizing effects of excessive leverage—for both individual financial institutions and the financial system as a whole—is that it causes or inflates asset bubbles, due to a feedback effect on asset prices. Intuitively, one would expect that, in a fair-value environment, a rise in asset prices would boost bank equity or net worth as a percentage of total assets. Stronger balance sheets would result



in a lower leverage multiple. Conversely, in a downturn, asset prices and the net worth of the institution would fall and the leverage multiple would be likely to increase. 162 Contrary to intuition, however, empirical evidence has shown that bank-leverage rises during boom times and falls during downturns. Leverage tends to be pro-cyclical because the expansion and contraction of bank balance sheets amplify rather than contain the credit cycle.

Leverage exacerbates the danger of contagion in the banking system and exacerbates the transmission of risks from the financial system to the real economy, for a number of reasons. First, in giving rise to credit and asset price cycles, excessive leverage contributes to macroeconomic booms and busts 163 —so-called asset bubbles 164 and crashes. 165 Driven as they are by flawed assumptions concerning fundamental value or by competitive pressures, bubbles have the potential to cause serious economic damage once they burst. It is clear that leverage increases in boom years when banks finance riskier loans and recedes during periods of economic contraction. 166 Thus, in periods of market booms, as asset markets typically become inflated, investors' appetite for risk and speculation is amplified. Asset price growth at these higher rates, however, may be "incompatible with the potential for overall, real economic expansion." 167

Second, as already noted, leverage contributes to pro-cyclicality because of the compound effect that increased borrowing may have on asset prices. It follows that the negative effects of leverage are felt more keenly in times of general financial distress. 168 Investors are aware that the capital reserves of highly levered institutions will be wiped out in the event of negligible asset price falls. 169 Thus, in a downturn, a bank with a highly levered balance sheet will suffer loss of confidence much earlier and faster than less-leveraged institutions. This leaves the financial system vulnerable to episodes of market panic, where asset price deflation and fire sales can quickly lead to mass insolvencies. 170

Moreover, even where insolvency is not an immediate threat, potential regulatory initiatives asking highly levered banks to sell assets to bolster capital in the event of distress could inadvertently create problems for other financial institutions. The decision to sell assets is likely to lead to downward pressure on asset prices. The damage inflicted by deleveraging phases on both the financial system and the real economy is often significant 171 and, where borrowing levels have risen to unsustainable levels, it may lead to GDP reduction, negating the growth gains initially made due to high leverage.

For many, the PRC's economy is approaching the tipping point of the leverage cycle. 172 Namely, it is expected that either the economy will turn downwards, triggering a crisis of confidence, or the economy shall not be able to refinance earlier debts in order to keep boosting the leverage cycle, or both. As the credit channel, leverage levels, and asset prices seem to be interdependent, a dearth of credit or a run will trigger deleveraging (and possible firesales) with deleterious effects for both the stability of the financial system due to declining asset prices and the economy. Nonetheless, it is far from clear what triggers deleveraging—namely, whether a fall in asset prices comes first followed afterwards by a fall in levels of new debt or vice versa.

Moreover, excessive leverage may just be a natural consequence of the combination of behavioural (over-confidence) factors and investment professionals' perverse incentives (e.g. the higher the volume of credit-related transactions in the shadow as well as in the regulated sector, the bigger their compensation or the brighter their job prospects). During periods of economic prosperity and low loan defaults, banks' capacity to create credit, coupled with inflated collateral values, increases banks' capital reserves and removes constraints on further credit growth. 173 In addition, some financial assets become very popular amongst a certain class of buyers in relation to the rest of the

public. 174 Buyers in this case are willing to pay higher prices, or tolerate increased risk. 175 This is often due to optimistic expectations concerning the future price trajectory of a given set of assets. Unsurprisingly, such pro-cyclicality contributes to higher risk-taking by banks 176 and influences bank managers' behaviour, 177 especially where an important component of the compensation package is variable. 178 Thus, it is right to argue that front-stop leverage ratios stabilize financial institutions and the financial system as a whole, 179 but it is unknown whether they also dampen the leverage cycle, especially without the aid of the monetary tool. 180

#### 4.2 Drivers of Bank Leverage in General and in the PRC

A debt-financed corporation is, in principle, as efficiently funded as an equity-financed one. 181 But, in reality, bank-capital structures are a function of the relative costs of capital. 182 Invariably, the costs of raising equity capital exceed those in relation to raising debt finance, as equity capital is perceived to be riskier than debt. 183 In addition, debt finance enjoys a more favourable tax treatment, as interest payments are deducted from tax liabilities whereas dividends are taxed as income. In the absence of a bail-in risk, or when depositors and senior debt holders are exempted from bail-in, bank creditors are exposed to a much lower level of risk than the aggregate risk level of the entire pool of bank assets, and thereby receive much lower returns. In contrast, bank-equity holders are exposed to much greater risks and therefore receive higher returns on investment. Increased equity requirements will therefore, in general, increase the costs of capital. 184 So the first driver of bank leverage relates to relative costs of financing balance-sheet expansion and that is regardless of the documented too-big-to-fail subsidy that may diminish with the influx of bail-in regimes. 185

While the cost of funding is a fundamental factor behind bank-leverage levels, this cost is not merely a matter of preferential tax treatment. Debt-cost advantages also relate to macroeconomic conditions prevalent at particular points in the business cycle. If the costs of borrowing are artificially low, due to prevailing national and global conditions of excessive liquidity, extensively insured deposits, or because of quantitative easing, this will result in severe distortions in bank-funding preferences, even in the absence of tax subsidies. 186 In addition, banks focusing on return on equity (RoE) will feel obliged to exploit this underpricing of risk to leverage and expand their balance sheet to increase profitability. 187

Shareholder-dominated banks will, in the absence of leverage constraints, pile up leverage: shareholders have a clear conflict of interests when choosing a bank's capital structure and they normally prefer to finance balance-sheet expansion through debt. 188 Admati et al. have vividly explained the reasons for shareholders' persistent preference for high leverage, 189 which goes beyond the common assumption of shareholder moral hazard due to the protection they are afforded by limited liability. While premature debt redemption in good times favours creditors, as the bank will become safer and less likely to fail in bad times, lowering creditor risks, bondholders will inevitably ask to hand in their bonds to be redeemed for a price higher than the prevailing market price. Thus, early redemption will eat into bank profits, leaving shareholders worse off without any clear compensating benefit on the share price that might even decline as lower leverage clearly points to lower levels of future profitability. This makes the upfront cost of early debt redemption undesirable to shareholders.

Shareholder preference for high leverage has a "ratchet effect" whereby worthy projects are ignored by an over-leveraged bank in favour of lower-quality loans. 190 It follows that, in the absence of

controls on leverage, all that is required, even in the case of benign senior managers, was to imitate competitor business strategies and herd. In the case of PRC banks where the interests of the majority shareholder (the state) are represented by the agents (directors and senior management), this effect is even more accentuated and means only one thing, as we saw in Section 3 above—namely, ever higher involvement with speculative activity in the shadow sector to boost profit and ever more lending to SOEs.

At the same time, bank management can use asset substitution, a very frequent practice in PRC banking, as we have already seen, to shift risks—a process made much easier through leverage, 191 especially where capital regulations allow/foster this process. The possibility of regulatory arbitrage may mean that banks select asset portfolios with higher risk in order to maximize return on capital. 192 Risk-weighting of assets in bank portfolios ought to mitigate these effects somewhat, assuming that risk weights were accurate, 193 in the absence of asset substitution. But it is clear from the foregone discussion that PRC banks push many risks off the balance sheet and actively manage risk weights. 194

Naturally, as bad credits accumulate, the impact on the PRC economy will become ever more accentuated. We show below how strongly upwards is the debt dynamic in the PRC corporate sector.

Apart from an adverse impact on financial stability, the most significant drawback of excessive leverage is so-called “debt overhang,” which reduces the efficiency of bank lending. It prevents firms from borrowing (and banks from lending) money to finance investment, even where that investment is guaranteed to produce a return, because of the earlier excessive borrowing and resulting fragile capital structures. Firms with large debt-equity ratios will therefore pass up valuable investment opportunities, even where those opportunities would lead to an increase of the firm’s net value. Where bank capital falls (e.g. due to asset repricing), it will prove extremely difficult for a bank to escape debt overhang and worthwhile investments will be sacrificed in favour of asset sales and deleveraging.

In these circumstances, if regulators require a replenishment of the bank’s capital base, the bank will be unable, or unwilling, to extend credit to worthwhile borrowers. This, by implication, reduces the overall volume of funding available to finance projects and creates inefficiencies in the allocation of funds. Thus, highly levered banks eventually make less efficient investment decisions, 195 resulting in both underinvestment due to the debt overhang 196 and misallocation of resources. Accordingly, overborrowing (and investment) during boom times is followed by a serious halt on new investment during a downturn, triggering a liquidity asphyxia and of course a sharp correction/fall in asset prices. 197 Both developments tend to have chain effects on economic activity and employment rates as well as on savings ratios.

In the case of China, where the steel and mining industries are not just among the most over-indebted, but also those posting the highest levels of NPLs, debt overhang would mean valuable resources trapped in unproductive industries whose time might have come not only due to levels of global competition, but also because such industries are among the biggest polluters. That is, resources required to build a modern and greener economy would be trapped with factories that simply have no future and have become an overall burden/inefficiency tax on the PRC economy and society.

#### 4.3 Risk-Weighted Capital Ratios or Unweighted Leverage Ratios

Well-calibrated bank-capital requirements should be able to both prevent banks from assuming excessive risk and compel banks to build sufficient capital cushions to absorb losses. Yet this is not what our recent experience says. At the heart of the GFC were severely undercapitalized banks. The main mechanism through which additional leverage became embedded within the financial system involved asset substitution by banks to circumvent capital requirements. This process led to capital-structure reporting that was misleading. Whilst asset levels increased markedly in the years leading up to the GFC, reported leverage levels at large commercial banks were remarkably constant. 198 This would normally suggest that, whilst banks expanded asset levels aggressively, they also managed to maintain stable regulatory capital levels and leverage ratios. Of course, official data did not provide the full picture. Leverage increases were caused by poorly calibrated internal financial models, 199 the abysmal performance of credit-rating agencies, 200 and fraud. 201 Moreover, there is strong evidence that reported leverage levels at both commercial and investment banks were manipulated, or were inaccurate, due to exploitation of applicable rules on bank capital by senior bank management. 202

Much risk-weight optimization (RWO) was achieved through employment of securitization models, as it was assumed that, by diversifying and spreading risk throughout the financial system through securitization, the financial system would be more stable and more resilient to shocks. 203 However, most of the risk remained in the banking system, as some of the most active purchasers of structured financial products were banks themselves. 204 In the period leading up to the GFC, RWO was practised by all banks which funded a large amount of their assets with short-term liabilities 205 through the use of conduits and off-balance-sheet vehicles. 206 These conduits raised funds by selling short-term asset-backed commercial paper, with the assets concerned usually comprising mortgage pools and secured loans. 207 Because these conduits funded themselves with short-term debt, any loss of confidence or liquidity pressures due to a reduction in buyers of commercial paper would quickly destroy their viability, indirectly exposing the sponsor bank to funding-liquidity risk. To offset this risk, banks granted credit facilities and guarantees to their conduits; however, sponsor banks remained liable for any losses arising from the conduit.

These risks were attenuated by the increasing maturity mismatch on the balance sheets of investment banks, which funded many of their operations through repurchase agreements (“repos”). According to estimates, investment-bank repo financing doubled between 2000 and 2007 and, in this way, it exposed the investment banks to potential liquidity shortfalls, if repo financing became compromised. 208 Large banks also enjoyed privileged access to these supplies of short-term debt over and above their access to depositor finance, so they were presumed to be safe in the event of a liquidity crisis. In practice, very few large banks were able to raise funds to bolster their capital once the GFC unfolded. In 2007, the short-term-debt market collapsed, 209 ruining the solvency of many institutions, which were found to be severely undercapitalized. 210

Today, a similar scenario of migration of funding and solvency risks to the regulated sector of the PRC may not be ruled out—quite the contrary, as explained in Section 2 above. In addition, benefiting from the manipulation of capital regulations, PRC banks switched away from loans into structured financial products, which attract lower capital charges; it is a clear and present danger, and the Basel system of risk weights has made things worse in a market where off-balance-sheet arbitrage opportunities are plentiful due to formal restrictions on bank lending and interest-rate caps.

The Basel system of risk weights has also been criticized as being excessively complex and highly difficult to understand, rendering it ineffective as a source of market discipline, also given its susceptibility to gaming. In fact, investors have reported losses of confidence in the risk-weighting

system 211 and in the capacity of banks to calculate their levels of RWAs, even amongst specific asset classes. 212 Reported wide discrepancies in British banks' capital ratios when non-weighted assets are measured against own funds provide enough evidence to make any confident investor in the banking sector and prudent bank regulator lose sleep. 213 This uncertainty severely undermines rather than reinforces market discipline.

Second, there is remarkable inconsistency in the way bank models measure RWA risk. The best recent example is the more favourable rating that credit-rating agencies give to derivatives exposures of banks over bank debt, due to the preferential treatment of derivatives contracts under the EU and, to some extent, the US resolution regimes. To this effect, research by the BCBS confirms considerable variation across banks in the reporting of risk-based measurement of assets. 214 For instance, there is a considerable degree of variation in, inter alia, the market-risk-measurement methodologies employed by global banks, banks' modelling choices, on the basis of the Basel II Internal Ratings methodology (retained by Basel III), and accounting requirements and practices. 215 Most of these variations may be explained by the fact that banks are able to "use whatever models they like, provided supervisors sign off on basic rules of their use. The same [product] therefore may be priced differently in two different banks." 216 In the event of a crisis, all this hardwired uncertainty as to the true state of bank-capital reserves will lead to a near certain loss of confidence in the banking system 217 and, at the very least, to an investor flight from bank shares, as happened during the GFC. 218

Third, there is a growing body of empirical evidence that suggests that RWAs are not a significant indicator of the possibility of bank default. As mentioned earlier, in the simplest form of gaming the rules, banks turned high-risk credits into highly rated structured securities eliminating capital requirements, although they extended credit lines to requisite securitization vehicles, which attracted no capital charges. Yet, provision of liquidity facilities to these vehicles exposed them to appreciable risks in the event of disruption of payments to the special-purpose vehicle (SPV) by the original borrowers, such as due to a disruption in borrower households' income. Moreover, they held structured credit instruments on their own balance sheet, exposing themselves to embedded leverage and increasing their asset-liability mismatch and their funding-liquidity risk.

The OECD has found that Basel Tier 1 capital levels were not a statistically significant predictor of default risk. When analyzed on the basis of unweighted leverage ratios, however, a significant statistical link was present. 219 As noted by the authors of the study, a simple leverage ratio is a much better predictor of default risk than RWA measures, which are invariably subjected to RWO. 220 In the same mode, Andy Haldane of the Bank of England has put together a persuasive set of tables showing that leverage has been a better predictor of bank survival than capital. 221

Here, it should be noted that, as already mentioned, while the US had a leverage ratio as a prudential tool, it failed to give any warning signs; as a result, US banks were at the centre of the GFC. Nonetheless, in this case, it was the ratio's inability to catch off-balance-sheet exposures in a period that US banks were massively engaged in off-balance-sheet activity. As a result, the leverage ratio did not produce any warning signs. This means that the way the leverage ratio is calculated and how off-balance-sheet exposures are accounted as part of bank assets is a process as important as identifying the right ratio.

## 5. MIXING EVOLUTIONARY AND "BIG BANG" REFORMS TO RESOLVE THE PRC'S FINANCIAL-STABILITY CHALLENGES

## 5.1 PRC Reform Effort to Tame Financial-Stability Risks

### 5.1.1 Overview

There is a widespread impression in the Western press that the PRC government either does not try or does not wish to radically tackle NPLs and diminish the financial-stability risks emanating from the shadow sector. Both views are wrong. 222 The truth is much more complex. The PRC authorities have adopted a multitude of measures to tackle the financial-stability risks. A first wave of reform seems to have taken place between 1998 and 2005. But then, between 2006 and 2013, the pace of reform stalled. 223 It picked up again when, on 25 March 2013, the CBRC promulgated regulation on the use of wealth-management funds by PRC banks in order to strengthen risk management. 224 It requires commercial banks to match each wealth-management product with invested assets (underlying assets), and to set separate management, account, and book-keeping for each product, as well as a percentage limit on non-standardized credit assets in total underlying assets. Under Notice No. 8, commercial banks are required to match each wealth-management product with invested assets (underlying assets), and to set separate management, account, and book-keeping for each product, as well as a percentage limit on non-standardized credit assets in total underlying assets.

As regards the shadow-banking system, the CBRC has already implemented the following concrete measures: (1) banks are prohibited from providing guarantees or repurchase undertakings for the assets underlying the trust schemes; (2) trust companies have been subjected to capital requirements to ensure that their capital is compatible with the assets held under their trust schemes; (3) a 30% cap has been imposed on trust companies allocating assets under a bank-trust co-operation arrangement referring credit assets (loans and bonds); (4) all assets held by a bank through a bank-trust co-operation arrangement must be reflected in the bank's balance sheet and therefore become subject to capital-adequacy requirements. 225

The CBRC promulgated the Regulation Governing Capital of Commercial Banks on 7 June 2012 and has moved to establish a living-wills (recovery and resolution plans) template for the largest institutions. Both measures mark a milestone for the regulation of the banking sector in China. As reported by the CBRC at the end of December 2013, the weighted average core Tier 1 capital-adequacy ratio of commercial banks (foreign branches not included) was 9.95%, increased by 0.14% year on year; and the weighted average capital-adequacy ratio was 12.19%, falling by 0.29% year on year. Moreover, in accordance with the Private Bank Guidelines, each wholly privately owned bank must have in place a "living will" for itself.

In addition, from July to October of 2013, a series of new policies in respect of cross-border RMB settlement were released by PBOC, including but not limited to the Notice of Simplifying the Cross-Border RMB Business Process and Improving the Relevant Policies and the Notice of Relevant RMB Settlement Matters for Overseas Investors to Invest in Domestic Financial Institutions. On 15 June 2015, the CBRC published the Amended Implementation Measures on Licensing Chinese-funded Commercial Banks, which were designed to further narrow the scope of licensing required for banking businesses, decentralize the power of the approval authority, and simplify the licensing procedures. This is regarded as a positive measure to invite private capital into the financial sector.

The CBRC Guidelines on Corporate Governance of Commercial Banks (hereinafter the Corporate Governance Guidelines) of 19 July 2013 require a sound organization structure, clear-cut responsibility boundaries, proper development strategy, good value criteria and social responsibility, effective risk management and internal control, an appropriate incentive, and disciplinary mechanism. Specifically, the Guidelines provide that the board of directors is accountable to shareholders and is ultimately responsible for the operation and management of a commercial bank. Thus, board members are required to have specific expertise and qualifications, and are subject to a remuneration structure that incentivizes proper risk management. 226 Moreover, the CBRC Guidelines place increased attention on internal controls within commercial banks, including effective risk assessment and effective procedures to safeguard assets and enable the bank to comply with applicable law. Commercial banks are required to establish independent risk-management departments, which shall be vested with sufficient power, resources, and a direct channel of communication with the Board.

Given that the discussed increase in levels of systemic risk is, in part, a by-product of the post-2008 loosening of credit standards to tackle the GFC, including a large expansion in credit that led to a worsening of average credit quality, the tightening of prudential regulations to force banks to build up reserves through higher provisioning for NPLs is a rather positive step. The same is the case with the adoption of more stringent capital-adequacy standards, placing limits on bank guarantees for corporate bonds, and tightening liquidity and diversification ratios. Banks have also been strongly encouraged to raise new capital.

To this effect, perhaps the most potent of this new wave of financial regulations is the promulgation of the Deposit Insurance Regulations. Under the Regulations, each bank shall maintain insurance coverage for money deposited with it and each depositor would be compensated for loss up to RMB 500,000 in the case that the accepting bank becomes insolvent or goes bankrupt. The Deposit Insurance Regulations came into force on 1 May 2015. 227

An even more potent example in the developing template for tackling and monitoring systemic risk is the macroprudential management framework (discussed in Section 2.2). The systemic-risk-monitoring framework includes the PBOC and the three regulatory agencies (CBRC, CSRC, CIRC) and consists of three layers: FCRG meetings to discuss and make decisions inter alia on financial-stability issues; risk surveillance, analysis, and prevention policies by individual agencies; and co-operation among them to arrive at an overall risk assessment.

### 5.1.2 Critique

Given this flurry of regulatory reform, the first question that may be asked here is why then the overall picture for financial-stability risks in the PRC has not markedly improved. A convincing explanation in this context may only be given by reference to fundamentals and these are the pace of innovation and the structure of financial regulation. Clearly, PRC authorities were caught unprepared to tackle the massive wave of innovation that marred the shifting economic paradigm, including the advent of electronic service providers and Internet-based businesses, and its spillover to a financial system that suffered the consequences of repression for at least two decades. The pace of the resulting transformation of the business paradigm and financial system structures and modes of service delivery and savings management has pushed regulators to the back-pedal, forcing them to engage reactively rather than proactively with emerging risks. Namely, unlike NPLs, where political pressure and policy preferences have historically played a large role in their accumulation,

shadow banking developed at such a pace, with implicit bank guarantees probably playing a role for such acceleration, that the PRC regulators were left far behind.

Second, the silo approach to regulation and lack of clear lines of responsibility for financial stability prevent effective implementation of prescribed rules. On the contrary, they leave the gate open for restrictions to be continually circumscribed and that is not just as a result of a chase for yield, but also and very clearly due to the funding needs of certain economic sectors. Specifically, the FSB has identified several weaknesses to the financial stability, including to the following 228 :

A limited macroprudential toolkit (dynamic differentiated reserve requirements and window guidance) is rather limited. To this effect, as financial liberalization progresses further, the FSB raises the prospect of the PBOC turning into a frontline macroprudential regulator to fulfil its system-wide financial-stability mandate “by adapting its own tools and having a greater say in the application of other tools.”

The sector-specific perspective of different regulatory agencies presents a considerable challenge to the overall calibration of macroprudential policy, “particularly as some measures may (for example) seek to loosen credit for countercyclical purposes while others seek to curb the growth in non-bank credit intermediation.” 229

Information-sharing among regulators—the increased blurring of product lines across the financial industry with the concomitant potential for increased regulatory arbitrage underscores the need for enhanced information-sharing across agencies but, right now, the sharing of key information (e.g. results of stress tests and on-site inspections) is either restricted or shared if requested.

Communication—the FSB notes that co-ordinating bodies like the FCRG and JMC do not have a separate communication policy and little information is publicly available on their deliberations. While there are good reasons to keep certain information confidential, on the other hand, public communication by these bodies can be a form of “soft” intervention 230 and also could form an important part of their accountability framework.

Absence of clear policy framework on which market participants’ expectations about the policy could be anchored, intensifying occasional turbulence caused by policy uncertainty.

## 5.2 Proposals for Reform

### 5.2.1 A New Regulatory Architecture

To remedy this piecemeal approach to systemic regulation and address the financial-stability challenges that the PRC currently faces, we suggest a four-pronged reform that is informed by the contemporary reform debate in China and the findings of impartial observers such as the FSB and IMF, and incorporates international reform experience (discussed in Section 3.1).

#### a) Abolition of Lending Restrictions and Introduction of a Binding Leverage Ratio

As a first step, we recommend the abolition of the least useful restrictions on lending such as loan-to-deposit ratios and the phasing-out of interest-rate caps on deposits within the same transitional period that would be set for the adoption of a binding all-encompassing leverage ratio. The latter



would catch off-balance-sheet exposures and will reveal the volume and size of such exposures, controlling, thus, to some extent interconnectedness between the regulated and shadow sector, and augmenting at the same time lending standards.

On the basis of historical experience and the discussion in Section 3.2 on the optimal calibration of a leverage ratio, we suggest that the new leverage ratio should be set at 7% over unweighted assets, which is roughly equivalent to 17.5% RWA. The ratio would act as the key capital-adequacy rule, pushing RWA capital standards to a subsidiary role. A transitional period of three to four years would be essential to give banks sufficient time to raise additional private capital. The leverage ratio could be relaxed if credit-supply contracts while the economy has entered into a recessionary phase moving down to 6% (roughly 15% RWA)—a decision that would have to be taken by the suggested below macroprudential council with the agreement of the microprudential regulator; or it could be raised at the peak of the macroeconomic cycle to reach 8% (roughly 20%). The 15–20% RWA (lower/upper limit) is less than the 23% RWA that an authoritative recent US regulatory report recommends. 231

Stripping debt finance of tax incentives makes bank-equity funding as cost-effective as debt. This reform and the recommended abolition of lending restrictions would mean that leverage ratios might not make for a reduction in overall levels of credit funding, especially long-term funding. Any funding shortfalls emanating from the introduction of the suggested leverage ratio and its expected indirect impact on shadow funding—which may not be substantial, as PRC banks do not direct a substantial part of their lending to SMEs and a substantial part of shadow-banking turnover is recycling money for the purpose of arbitrage rather than credit investment—could be replaced by risk-equity capital.

Only Tier 1 capital, namely equity and near-equity instruments, would be included in the definition of capital. This reform would both raise the quality of bank-capital loss absorption and bank governance as, in the event of a bank failure, the losses of shareholders in the gradually privatized banks will be substantial. In this respect, this measure would differ from the existing leverage ratio of 4%, since the latter is little more than a mere reporting tool for now. 232

For the leverage ratio to work properly, hidden contractual or statutory exposures of banks to the shadow sector will have to be more clearly defined and disclosed, at least to the regulators. The recent modification of the Macro Prudential Assessment risk tool by the PBOC to require banks to report all their off-balance-sheet exposures as much as those that are on the balance sheet 233 with a view of setting aside more capital would only help the implementation of the suggested leverage ratio.

#### b) A Binding and Effective Regime for Early Intervention

To aid the effectiveness of the suggested shift in the calculation and use of bank capital, as well as for the timely tackling and provisioning of NPLs, we recommend the introduction of an explicit and binding framework for early intervention 234 —namely, a regime that will deal with banks that are entering into trouble but are still a going-concern institution and a viable business. To ensure the impartial application of the early-intervention regime that would aim to restore the ailing bank's capital and liquidity position relying, to some extent, on the pre-agreed actions included in the banks' "living wills," we suggest that a formal/binding early-intervention regime should be administered by both the suggested below microprudential regulator and the resolution authority with the explicit participation (with a casting vote) of the PBOC in the guise of the LoLR. The regime

will also offer guidance as to when a bank is considered viable and the conditions under which LoLR assistance may be extended, curbing but not diminishing the PBOC's discretion.

c) Abolition of the Silo Approach: Microprudential Regulator, Conduct and Consumer-Protection Watchdog, Resolution Authority, Macroprudential Council

As a third step, we recommend the abolition of the silo approach in favour of an objectives-based approach to regulation. A suggestion that is so radical is, of course, bound to attract the wrath of existing regulatory agencies and interest groups supporting them. In this context, we track closely the post-crisis reform of the UK's financial architecture while also borrowing from the post-2008 regulatory configuration in the US. Implementation of our proposal would entail merging the CBRC and the CIRC into a single microprudential authority in the mould of the UK's PRA. This will be solely responsible for institution licensing and prudential stability across the regulated financial sector, with no silos between banks and investment and insurance firms. Then, we suggest that a resolution authority that may be the deposit-insurance scheme, as is the case with the FDIC in the US, or a resolution authority acting as a division of the PBOC should have a say in microprudential regulation, especially in the context of an early-intervention regime.

As part of the same reform step, we suggest turning the CSRC into a conduct and consumer-protection authority. Namely, in a twin-peaks-plus structure, we envisage a conduct regulator that would act as an expanded version of the UK's Financial Conduct Authority (FCA). This regulator would be responsible for investor protection, supervising conduct risk across the regulated sector—that is, with no silos between the banking, securities, and insurance sectors—and would monitor against market abuse. It would also enforce securities-law violations. Even more critically, the same regulator should be a financial consumer-protection authority for all firms, monitoring all firms that offer consumer investment products, whether banks, shadow banks, or other licensed brokers. As this authority would enforce consumer-protection regulation, there would be a requirement for shadow operators to register with it.

Within the same third reform step, the last action would be the establishment of a macroprudential authority in the form of a high-level financial-stability council within the PBOC (comprising the PBOC governor and deputy governor, the minister to the treasury, and the heads of the microprudential and conduct authorities as well as the head of the resolution-authority/deposit-guarantee scheme).

The macroprudential council will have paramount access to all aspects of financial-stability data, including about emerging risks and exposure levels in the shadow sector. To make the processing of such information easier, the macroprudential council will not just have access to the data of the microprudential and conduct regulator. The PBOC should open and operate for the benefit of the council a register where all claims and counterclaims in the shadow sector would be reported. The register, in its architecture, would not be very different to the trade-reporting systems used for transactions in derivatives. Reporting data to the PBOC register would not entail licensing of shadow-banking operators. But lack of such reporting or irregular reporting would mean that the operator of a FinTech platform, a licensed institution, or a shadow vehicle would be subject to sanctions imposed by the conduct regulator for breach of data-reporting regulations. Contemporary data-mining tools could make such a register much more useful than would have been the case in the past and an essential tool for the detection of emerging risks and above all for mapping interconnectedness.

The suggested macroprudential council should not be merely fashioned in the mould of the Financial Policy Committee of the Bank of England or of the US Financial Stability Oversight Council (both discussed in Section 3.1 above); it ought to be equipped with its own toolkit and powers of imposition of its rules/guidance. These direct powers could be exercised as a last resort to avoid forbearance on behalf of the microprudential supervisor. In addition, the macroprudential committee would issue its own communications and guidance to resolve the aforementioned policy direction and market-guidance inadequacies identified by the FSB (discussed above).

#### d) Reform of Legal and Tax Regimes Governing Equity Investment

This fourth step is essential in order to foster equity investment, especially risk capital investment provided by venture capital and private equity firms. Any funding shortfalls for meritorious projects emanating from the import of the suggested leverage ratio and its indirect impact on shadow-banking credit financing could be replaced by risk-equity capital. Moreover, it is a fiscal-policy reform that is increasingly regarded as essential to secure systemic stability and a robust macroprudential environment. 235

#### 5.2.2 Evaluation of the Proposed Capital Reforms and the Question of Adverse Selection

This paper has explained why properly calibrated leverage ratios may prevent wasteful use of capital and make financial institutions more resilient. They control asset substitution and risk shifting. Essentially, banks have to increase the size of their capital cushions, no matter the risk-weighting of the relevant exposures and in proportion to the net increase in value of the bank assets. An unweighted and all-encompassing leverage ratio is simple to apply and monitor, and eliminates regulatory arbitrage, namely the bank's ability to engage in RWA and the more particular forms of regulatory arbitrage in the PRC to avoid the already discussed lending and interest-rate restrictions. It would thus restore confidence in the financial health indicators of Chinese banks, putting a stop to frequent runs on their shares.

It is also argued that a binding and all-encompassing leverage ratio will sharply reverse incentives when it comes to bank lending, rather than the current ex post requirements, which, in an environment of lending biases and limited accountability for bank management, might lead to adverse selection that is discussed below. PRC banks became subjected to wide leverage ratios from 2013, with further overhauling of the ratio without raising capital requirements in 2015. So they are already able to meet higher leverage ratios 236 but, even if they were not able to do so, raising private equity funding can only increase private-sector investment in PRC banks, 237 the quality of risk management, and governance of PRC banks, which are both state-dominated and state-manager-dominated, leading to severe lending biases. It will also provide a very strong incentive to bank leadership to appoint and promote executives from the ranks of private-sector professionals with strong backgrounds in credit-risk management. In addition, it will provide a check on smaller banks' risk on management procedures, which seem to be not much different than the loose processes followed by shadow banks in an alleged race to the bottom. 238

Arguably, the proposed boosting of bank-capital structures and funding sources will incentivize: (1) shareholder controls, as it would be their equity that would be at stake if a loan becomes an NPL and not just creditors' (depositors' and bondholders') money; (2) the shoring-up of management accountability for lending standards; (3) the implementation of sound risk-management procedures;

and (4) the tightening-up of bank governance. These changes will augment and speed up implementation of declared regulatory objectives in the PRC banking sector, like those included in the aforementioned CBRC Corporate Governance Guidelines.

We have already explained (in Section 4) that empirical research on the implementation of leverage ratios, which entail higher equity buffers for banks, has not shown them to have an appreciable adverse impact on economic growth. There is no reason to believe that the results would be substantially different in the PRC, especially if any shortfall in funding due to higher bank-capital constraints is made up by an increase in risk-equity capital and other forms of equity funding. So the final major question that any cost–benefit analysis of the proposed introduction of a leverage ratio has to answer is the issue of adverse selection.

It is argued that higher leverage restrictions do not always reduce risk for the bank. Even if the risk of individual assets remains constant, bank managers may be incentivized into choosing assets with more highly correlated returns. 239 Accordingly, as this argument goes, leverage ratios may encourage banks to increase the riskiness of their asset portfolio, not decrease it—a classic Goodhart’s Law outcome. This concern was precisely the rationale for seeking risk-sensitivity in the Basel framework in the first place. 240 In many ways, reluctance to regulate leverage stemmed from a fear that it would affect economic growth without making banks safer, since banks would evade the “crippling”-profit consequence of a strict leverage ratio by focusing on high-return projects, which are riskier in most cases. Namely, as this argument goes, leverage ratios are bound to create perverse incentives. 241

The fact that leverage ratios do not distinguish between different types of bank assets on the basis of their riskiness could mean that banks felt encouraged to build up relatively riskier balance sheets or to expand their off-balance-sheet activity. 242 In addition, the lack of risk-weighting in the calculation of leverage ratios could penalize prudent banks holding substantial portfolios of highly liquid, high-quality assets. Accordingly, as this argument goes, because leverage amplifies gains from both risky and riskless investments, riskier assets generate higher returns, and RoE targets incentivize asset risk. 243 Research on bank performance during the GFC strongly suggests that asset write-downs were positively and significantly related to asset volatility and leverage. 244

Yet adverse selection does not seem likely, if PRC regulation of loan securitizations and issuance of asset-backed bonds are tightened. Securitizations can be a key form of loan refinancing; banks will strive to put on their books better loans, not worse, in order to be able to sell them. Second, if banks are forced by means of capital-adequacy regulation to keep “skin in the game” (e.g. a co-investment stake in the pool of varied size), their lending will be less reckless, even if they plan to slice and securitize the loans, since some exposure to the pool of underlying assets shall remain. Thus, good lending could be carried on, while underwriting standards are enhanced.

Finally, another argument against the possibility of adverse selection is that a binding leverage ratio will shift the attention of supervisors from dealing with ex post outcomes of bad lending to monitoring closely the behaviour of the ratio and thus increasing the chances of successful early intervention and preventive action when the signals turn negative. It also incorporates market discipline. Leverage ratios may remedy weaknesses of creditor monitoring of banks in the face of complexity and opacity of bank balance sheets, as a bank that will need to boost its capital buffers to meet the ratio would have to be profitable and/or of good repute so that it could do so (meeting the ratio) through the sale of quality assets, retained profit, or from the market.

## 6. CONCLUSION

The key characteristics of the emerging economic and financial paradigm in the PRC points towards a dynamic economy that is gradually shifting focus away from manufacturing, which merely required provision of bulk lending to SOEs, towards innovation and technology championed by smaller firms. Clearly, the PRC needs a financial system that is fit for the purpose of financing the new economic paradigm. The biggest obstacle to achieving this goal is the fact that the financial system has become much more fragile due to rising leverage levels, under-performing or non-performing legacy assets (MPLs), and interconnectedness with the sprawling shadow sector. The latter is in part fed by rent-seeking, and regulatory and interest-rate arbitrage while it also serves, in part, as the provider of innovative financing.

This article has attempted to answer the question on how the PRC's rising financial-stability challenges could be met. For this reason, we have focused on the role of PRC banks in this environment of mounting financial-stability challenges rather than just examining its ever-expanding shadow sector in isolation. We propose that financial-stability reforms in the PRC should encompass a radical reconfiguration of the Chinese regulatory system to augment and streamline financial-stability monitoring, microprudential supervision, and consumer protection. Our proposal is more radical than the mere introduction of a financial-stability council in the PRC and requires the radical restructuring of existing PRC financial regulators. We have also focused on the importance of the bank-governance environment, early intervention, and crisis management as a means to contain the recurrent problem of bad lending and NPLs.

PRC shadow banking is bank-centric rather than a system sourcing finance through the (short-term) capital markets. It is boosted by implicit guarantees rather than financial engineering and it is heavily reliant on retail funding, although it is not entirely parasitic. We have, thus, argued that the PRC's shadow-banking system should be conceived as a more or less parallel banking system that short-circuits the regulated sector. For this reason, in our view, the orderly operation of the PRC shadow-banking sector requires the improvement of the regulation of banks and a wider paradigm shift in the economy towards equity funding with a proliferation of risk-equity capital schemes moving away from the current model of funding for economic activity that is overwhelmingly debt-driven.

This multi-track reform is necessary to both increase the resilience of banks and battle the effects of interconnectedness. As things stand, it is, ultimately, the regulated sector that will have to absorb any financial-stability shocks. Therefore, to address the financial stability challenges facing the PRC financial system, we recommend higher levels of capital as a first-line defence. In this context, we suggest the introduction of a binding and all-encompassing leverage ratio, which would catch off-balance-sheet exposures, and whose breach would require near immediate replenishment of capital buffers rather than using it as a reporting tool. This reform would primarily target system-wide leverage and interconnectedness with the shadow sector.

The natural consequence of excessive leverage is ever more risk-taking and rent-seeking. Leverage, in combination with the general opacity of bank balance sheets and asset substitution which, in the case of the PRC, means very high levels of interconnectedness with the shadow sector in a myriad of visible and more crucially invisible ways, creates serious information asymmetries between bank management and their monitors (shareholders, creditors, and regulators). This not only exacerbates threats to the health of the regulated sector, but also the trend to bury risks in the shadow sector. 245 For this reason, we have provided an extensive explanation of why a well-calibrated leverage ratio, boosting equity capital requirements to a reasonable level, followed by abolition of existing lending restrictions can prove an effective measure for controlling rent-seeking. It would also help to

smooth up the leverage cycle while it would improve bank governance and NPL management. As regards bank lending, extension of credit that is based on equity funding as much as deposits will seek higher interest rates<sup>246</sup> for riskier lenders, applying a natural constraint on lending to SOEs and thus improving the quality of bank-lending books as much as reversing SOE-lending biases.

Moreover, we have come to view the reform of the silo approach to financial regulation as an essential step in the modernization of China's regulatory regime and the building up of a regulatory architecture that is fit to meet the challenges of the emerging PRC economy and financial sector. We have thus recommended reforms that range from a "big bang" approach: shifting to objectives-based regulation from the current sectoral approach and the establishment of a fully-fledged macroprudential council (that has direct and unfettered access to all financial-stability information, including a register of shadow-banking claims) to a number of evolutionary and essential steps. The latter would include the introduction of effective early-intervention and resolution frameworks and the granting of critical competences to the PBOC as a LoLR and the Deposit Guarantee Scheme as a likely resolution authority, both with a view to strengthening the microprudential regime as much as boosting systemic stability.

The suggested architecture would include a conduct/consumer-protection regulator with extensive powers. A consumer-protection agency will be able to guard against financial fraud cases and enforce the attendant legal and regulatory regime regards of any registration/licensing requirements. Full implementation of our proposals will amount in the end to an ambitious redesigning of the PRC financial sector to better absorb future risks and allow the PRC to take bolder initiatives to reform its economy, while aiding at the same time its attempts to make the Renminbi a global reserve currency.<sup>247</sup>

1International Monetary Fund (IMF) (2016).

2This term is used to describe a phenomenon whereby lots of bad debts have accumulated on bank books owned by various actors in the real economy. An inability to tackle bad debts prevents firms from borrowing (and banks from lending) money to finance investment, even where that investment is guaranteed to produce a return, because of the earlier excessive borrowing and resulting in fragile capital structures. Firms with large debt-equity ratios will therefore pass up valuable investment opportunities, even where those opportunities would lead to an increase of the firm's net value. Where bank capital falls (e.g. due to asset repricing), it will prove extremely difficult for a bank to escape debt overhang and worthwhile investments will be sacrificed in favour of asset sales and deleveraging. See Myers (1977), pp. 147–75.

3IMF (2014), pp. 74–8.

4A recent authoritative analysis of the historical development of the Chinese shadow-banking sector, legal underpinnings, and risks is Shen (2016b). Thus, for the purpose of further analysis, we refer the reader to Professor Shen Wei's authoritative analysis. See also, for a credible quantitative study, Elliott et al. (2015).

5The term was first coined by Paul McCulley, a senior economist in a major fund manager, in 2007. McCulley defined shadow banking as "unregulated shadow banks [which] fund themselves with uninsured commercial paper [and] which may or may not be backstopped by liquidity lines from real banks" and which stand in contrast to "regulated real banks, who fund themselves with insured deposits, backstopped by access to the Fed's discount window," McCulley (2007). A more complete definition is offered Fin SB, Strengthening Oversight and Regulation of Shadow Banking: An

Overview of Policy Recommendations (2013), iv. For a comprehensive discussion of the limits of the various definitions, see Avgouleas (2015), Chapter 22.

6 Given the intrinsic characteristics of the PRC shadow-banking sector, for the purposes of this article, we endorse the definition by former Federal Reserve Chairman Ben Bernanke, who described it as comprising: “[A] diverse set of institutions and markets that, collectively, carry out traditional banking functions—but do so outside, or in ways only loosely linked to, the traditional system of regulated depository institutions.” See Bernanke (2012).

7 “Although it is difficult to be precise, it appears that about two-thirds of shadow banking lending in China can be characterized as ‘bank loans in disguise’ that result from regulatory arbitrage .... That is, this portion of shadow banking consists of loans that are originated by the banks and would have been made directly by them and retained on their books were it not for regulatory constraints or outright prohibitions,” Elliott et al., *supra* note 4, pp. 9–11.

8 Wealth management products are investment products that provide a return based on the performance of a pool of underlying assets. Typically, the underlying asset is a single large loan or a pool of loans. WMPs are generally offered by banks or trust companies and are very popular because they offer higher returns than bank deposits due to lack of restrictions on product yields. Note that: “WMPs are included in discussions of shadow banking in large part because they are a close substitute for bank deposits. WMP investors generally assume that the target return of these products is effectively guaranteed by any bank or trust associated with the product,” *ibid.*, pp. 1–2. In China, WMPs are also called “Financial Management Products,” which is not a legal concept. In practice, funds, investment-linked insurances, aggregate asset management plans by securities broker, and collective trust investment programmes are collectively known as financial-management products. See Xu & Zhang (2015), p. 5.

9 Shen, *supra* note 4, p. 17.

10 TBRs are effectively a simple form of derivative transaction whereby the purchaser of the TBR receives all or a stated proportion of the returns accruing to a trust. Elliott et al., *supra* note 4, pp. 1–2.

11 These new shadow-banking products work like trusts, with a bank investing proceeds from its WMPs in a directional plan, which it then lends to a borrower chosen by the lender. This extension of credit can circumvent restrictions on certain borrowers, like local government financing vehicles, as well as capital requirements. See Lee (2016).

12 This is a very important issue because the whole of the PRC financial system and economy are characterized by maturity mismatches that can trigger or exacerbate the risk of illiquidity. As Armstrong-Taylor (2016), pp. 50–51, notes: “[m]ost of the debt in the Chinese financial system is in the form of bank loans and is therefore short-term. On the other hand, many of the assets that this debt has been used to buy or build are long-term (such as infrastructure and real estate). Liquidity risk among borrowers is endemic. For example, most local government debt had a maturity of between three and five years in early 2014, and almost 40% of it was due in the next two years. Much of this debt is matched against long-term assets (such as infrastructure) and so will need to be rolled over. Even if the local governments are solvent, this represents a risk: if liquidity dries up, it would be hard to roll over these debts, and defaults could result.”

13 See IMF, *supra* note 3, pp. 75–6. This especially the case with the Chinese Repo agreements, which are invariably overnight. IMF, *supra* note 1, pp. 35–7.

14Shen, *supra* note 4.

15As observations about the size and risks of the Chinese shadow-banking system vary depending on the definition adopted, in this article, we endorse the following definition proposed by former Federal Reserve Board (FRB) chairman Ben Bernanke, who described it as comprising: “[A] diverse set of institutions and markets that, collectively, carry out traditional banking functions—but do so outside, or in ways only loosely linked to, the traditional system of regulated depository institutions.” See Bernanke, *supra* note 6.

16See Schwarcz (2016); Lin (2016).

17See Dang et al. (2014).

18See Acharya et al. (2016).

19E.g. a study by Tian et al. found that “trust companies were the main culprit of financial instability and commercial banks assumed the main risks over 2007–12 in the Chinese shadow banking system,” Tian et al. (2016).

20The IMF Country Report notes: “Directors noted that China’s economic transition will continue to be complex, challenging, and potentially bumpy, against the backdrop of heightened downside risks and eroding buffers. They stressed the need for decisive action to tackle rising vulnerabilities; reduce the reliance on credit-financed, state-led investment; and improve governance, risk pricing, and resource allocation in the state-owned enterprise (SOE) and financial sectors. Directors highlighted the urgency of addressing the corporate debt problem through a comprehensive approach .... Directors underscored the importance of further enhancing financial stability. Priorities include encouraging banks to proactively recognize loan losses and strengthen capital ratios; enhancing supervisory focus on liquidity risk management and funding stability risks; and addressing vulnerabilities in shadow products. Directors also recommended a major upgrade of the supervisory framework to foster cross-agency information sharing and policy coordination,” IMF, *supra* note 1.

21The China Banking Regulatory Commission (CBRC) issued in 2011 the first set of macroprudential tools that included Administrative Measures for a Leverage Ratio of Commercial Banks, requiring that systematically important banks shall reach the minimum leverage ratio of 4% by the end of 2013 and non-systematically important banks shall meet this requirement by the end of 2016, as part of its overall framework implement Basel III. According to the measures, the term “leverage ratio” refers to a ratio of Tier 1 capital possessed by a commercial bank and meeting the relevant provisions to the balance of the adjusted on- and off-balance-sheet assets of the commercial bank. CBRC requires that information disclosed on the leverage ratio of a commercial bank shall, among others, at least include leverage ratio level Tier 1 capital, deduction items for Tier 1 capital, balance of the adjusted on-balance-sheet assets, balance of the adjusted off-balance-sheet assets, and balance of the adjusted on- and off-balance-sheet assets. Commercial banks have to disclose leverage ratio information within four months after the close of each financial year. These were overhauled to catch better off-balance-sheet exposures in 2014 and 2015. See Wang & Sun (2013).

22Moody’s Investors Service (2016) “Negative outlook on China’s banking system driven by challenging operating environment and deteriorating asset quality and profitability.”

23Admati et al. (2013).

24Under the new rules of the CBRC, banks may no longer use wealth-management funds to invest directly or indirectly in their own investment products. For analysis on the objective and impact of



these restrictions, see Weinland & Wildau (2016): “China’s banking regulator is cracking down on financial engineering that Chinese banks have used to disguise trillions of dollars in risky loans as investment products.”

25New rules require some banks to provision for losses against WMPs, which funnel money from retail investors into securities ranging from stocks to corporate bonds and real estate, in an effort to insulate the lenders from future losses. Bloomberg.com (2016b).

26 Ibid. Bloomberg notes: “Banks may be using WMPs to repackage and invest in other WMPs in an attempt to avoid rules introduced in 2013 that similarly sought to shore up the financial system by limiting the amount money lenders can invest in ‘non-standard’ securities to 35 percent of total assets. Such a move would have parallels with some of the more complex collateralized debt obligations (CDOs) that exacerbated subprime losses at U.S. banks in the run-up to the 2008 financial crisis.”

27On the fallacy that debt, including deposits and short-term debt, offers a cheaper than equity way to fund bank loans, absent tax incentives that favour debt over equity mostly by means of deducting interest payments from the tax bill, see Admati et al., *supra* note 23, pp. 9–12, 61. See DeAngelo & Stulz (2013).

28For the impact of sharp deleveraging and fire sales, see Brunnermeier et al. (2009).

29See Communiqué of the Third Plenary Session of the 18th Central Committee of the Communist Party of China 2014. Specifically, the Plenum noted: “We must deepen economic system reform by centering on the decisive role of the market in allocating resources, adhere to and improve the basic economic system, accelerate the improvement of the modern market system ... economic system reform ... [means] ... let the market play the decisive role in allocating resources ... [thus] it is necessary to improve the property rights protection system, vigorously develop a mixed economy, promote establishment of the modern corporate system in state-owned enterprises, and support the healthy development of the non-public sectors.”

30For in-depth analysis of the micro- and macroprudential impact of leverage ratios, see Avgouleas (2015b). In certain areas of analysis, this article draws on this earlier paper of the author. Also Section 4 of this article draws on earlier research on leverage-agency costs and bank governance jointly carried out with Jay Cullen.

31Kiyotaki & Moore (1997).

32E.g. Hellwig (2014).

33Elliott et al., *supra* note 4, pp. 5–6.

34See Armstrong-Taylor, *supra* note 12, pp. 41–2.

35 Ibid. It should be noted that many of the above constraints have been gradually relaxed since 2014.

36Avgouleas (2016).

37The reverse bias is best manifested in the form of sanctions for default, which, under the current commercial bank-credit manager responsibility system, sanctions for private enterprise default are much more severe than SOE loan default. See Elliott et al., *supra* note 4, pp. 5–6.

38 Ibid.

39See Avgouleas, *supra* note 36.

40Bank for International Settlements (1999).

41 *Ibid.*

42See Hsu et al. (2007).

43Ma & Fung (2002).

44 *Ibid.*

45WorldBank.org (2016).

46Ma (2006).

47 The Economist (2004).

48Lai (2016), Chairman of CHAM: “Bad loans to grow as disposal becomes harder.”

49 *Ibid.*

50First, the government reduced the RMB benchmark interest rate for loans and deposits for financial institutions, as well as reduced the interest rates for relending and rediscounting of the central bank. In order to increase liquidity, the central bank also reduced the deposit reserve ratio four times in a row in the second half of 2008, which enabled the usable funds of commercial banks to greatly increase. Second, the credit support to small and medium-sized enterprises continued to increase, targeting the financing difficulty of small and medium-sized enterprises after the financial crisis. See Borst & Lardy (2015).

51Lipton (2016).

52 *Ibid.*

53Tu (2016).

54See Reuters (2016b).

55IMF, *supra* note 1.

56See Edwards (2016). Indicative of the prevailing uncertainty as to the true level of NPLs in China. See Wildau (2016a).

57This finding greatly underlines the need, as we propose elsewhere, for the PRC to implement a registration system, operated by the regulators, under which all credit transactions are recorded, whether taking place in the regulated or the shadow sector. Given the importance of big data for the detection of risk (so-called RegTech), the value of such a registration system for the early detection of systemic risks may not be underestimated.

58Moody’s Investors Service, *supra* note 22.

59See Daniel et al. (2016).

60Yuan (2016).

61 *Ibid.*

62A group of “zombie” companies has been identified. The State-owned Assets Supervision and Administration Commission (SASAC) has identified 345 “zombie” firms among central SOEs, which have run losses for three consecutive years and do not fit the priorities of the government’s industrial policy. The plan is to dissolve them in three years. See Maliszewski et al. (2016); FSB (2015a).

63See Daniel et al., *supra* note 59.

64Bloomberg reports, citing anecdotal, and thus possibly inaccurate, evidence that the majority of bank-debt securitizations are purchased by state-owned buyers due to lack of private interest. See Bloomberg.com, *supra* note 25.

65See for the urgency of the need to conduct extensive corporate debt restructuring IMF, Maliszewski et al., *supra* note 62, pp. 2–5.

66For the importance of housing loans, upwards price trends in the real-estate sector that raise suspicion of an evolving asset bubble, and the eventual risk to the regulated sector, see Liao et al. (2016), p. 3.

67It is generally assumed that this is lower than the size of the US shadow-banking system (150% of GDP) and the global total calculated by the FSB to stand at 125% of global GDP. See Elliott et al., *supra* note 4, p. 2.

68Moody’s Investors Service, *supra* note 22.

69FSB (2015a), pp. 9, 28.

70Under the General Provisions for Lending of People’s Bank of 1996, lenders must be approved by PBOC and register with the State Administration for Industry and Commerce before offering lending business in the PRC.

71Notice of People’s Bank of China on Issues Concerning Entrusted Loans by Commercial Banks (2000) allows corporations to entrust money with banks that banks can use to relend to other corporations. This is, of course, a good way for SMEs and other private enterprises to gain access to credit that would not be available to them otherwise.

72See Du et al. (2016).

73See Allen et al. (2015).

74 *Ibid.*

75See Shin & Zhao (2013).

76See Du et al., *supra* note 72.

77 *Ibid.*

78As discussed below, the development/proliferation of such firms is, in part, officially encouraged as part of the “Internet Plus” Initiative of the Chinese Government, launched by Chinese Premier Li Keqiang in March 2015 and endorsed in July 2015 by the State Council in its “The Guiding Opinions on Promoting Internet Plus Initiative” and on 29 October 2015 by the Fifth Session of the Committee of the Chinese Communist Party which held the “Internet plus” initiative to be the new major economic strategy.

79A subsidiary of the Internet giant Alibaba, which last year became part of a bigger constellation of financial services provided by the firm and was renamed Ant Financial. E.g. Ant financial is reported to offer stakes on an Internet-based money-market fund (Yu'e Bao) that it has developed, which offers a much higher interest than bank deposits. The stakes are sold through the Alipay Wallet app. Thus, the provision of payment and investment services has become integrated in the same electronic platform. See Tian (2015).

80The boundaries between this activity and “crowd funding” are unclear. In the view of one of us, the difference is whether the platform solicits funds.

81The classic work on this is Arner et al. (2015).

82Elliot et al., *supra* note 4, p. 1.

83E.g. IMF, *supra* note 1, notes: “Continued rapid credit growth in China and expanding shadow banking products pose mounting risks to financial stability. The rapidly growing financial system is becoming increasingly leveraged and interconnected, and a variety of innovative investment vehicles and products are adding to the complexity ... corporate debt-at-risk remains high, and underlying risks from non-loan credit exposures add to these challenges.”

84See also Acharya et al., *supra* note 18.

85See Shen (2015), pp. 51, 61, 65.

86On this, see the analysis of Shen, *ibid*.

87In fact, in December 2012, investors of Huaxia Bank, a middle-sized PRC bank, run on the bank after hearing the news that a WMP issued by the bank had stopped offering redemptions on maturity. See Kwong (2012).

88See, for an analytical account of those frauds, Lee (2015), pp. 361–84, 367.

89See Clifford Chance (2015).

90Wildau (2016b).

91“Commerzbank AG estimates such financing, hidden from view on balance sheets, may cause banks losses of as much as 1 trillion yuan over five years. Shadow lending assets swelled to 45 trillion yuan as of June 30, equal to about two-thirds of the economy, from 19.2 trillion yuan in 2011, Moody’s Investors Service estimates .... Brokerages’ directional AMPs grew 40 percent last year to 10.2 trillion yuan, while fund subsidiaries’ assets more than doubled to 8.6 trillion yuan, according to the Asset Management Association of China. More than 90 percent of directional AMPs are sold to channel bank loans, Morgan Stanley wrote in a Feb. 19 report, adding that 87 percent of fund subsidiaries’ assets were invested in non-traded credit assets such as trust loans in 2014.” See Lee, *supra* note 11.

92See Clifford Chance, *supra* note 89.

93 “[I.e.] the NAV per unit remain a constant at RMB 1 and the profits generated each day being distributed as new fund units.” *Ibid*.

94The Reserve Primary Fund was a large money-market mutual fund. On September 16, 2008, during the global financial crisis of September–October, 2008, it lowered its share price below USD 1 (“breaking the buck”—i.e. the assumption that is NAV would be kept at USD 1) because of exposure

to Lehman Brothers debt securities. This resulted in a run from investors on MMFs seeking the return of their funds intensifying the liquidity crisis in money markets which were key providers of funding to the short-term paper markets intensifying the onslaught of the financial crisis mounted. Normally, the NAV of money-market funds is kept at USD 1. See Siegel Bernard (2008).

95Clifford Chance, *supra* note 89, p. 6.

96The Chinese banking regulatory framework is fundamentally premised on legislation enacted by the National People's Congress, the highest legislative body of China, namely (1) the Law of the People's Republic of China on the People's Bank of China (1995, amended 2003), (2) the Law of the People's Republic of China on Commercial Banks (1995, amended 2003 and 2015, hereinafter the "Commercial Banks Law"), (3) the Law of the People's Republic of China on Regulation of and Supervision over the Banking Industry (2003, amended 2006).

97With the enactment of the People's Bank of China Law in 1995, the PBOC was officially designated the role of the central bank, with the power to formulate and implement fiscal policy, and to supervise and control the banking industry.

98China's current framework for financial stability consists of three levels: at the higher level—the regular meetings of the top leaders of the supervisory authorities, and other related ministers chaired by the State Council. At the middle level—the regular meetings of the supervisory authorities. In the meeting, the financial regulatory agencies regularly co-ordinate actions and communicate on major issues, such as financial stability, financial reform, and risk mitigation. At the lower level—regular communications between the regulators and the regulated institutions.

99PBOC.org (2015).

100 Circular of the General Office of the State Council on Relevant Issues of Strengthening the Regulation of Shadow Banking (State Council Circular No. 107, 2013).

101See Huang (2015), pp. 482, 491.

102See FSB (2015a), p. 24.

103IMF, *supra* note 66, pp. 1, 23–4.

104See also *ibid.*, pp. 9–11.

105 *Ibid.*, pp. 9–10.

106 *Ibid.*, pp. 24–6.

107E.g. before its abolition, the UK's Financial Services Authority (FSA) had come to be widely regarded as a failed regulator. See House of Commons Treasury Committee, "The run on the Rock," Fifth Report of Session 2007–08, discussing the failings of supervision in the case of Northern Rock, a medium-sized British bank that collapsed in September 2007.

108Specifically, the FSB notes: "Each agency has interpreted its mandate as including a macroprudential dimension, and each is developing its own analytical framework that includes stress testing, early warning systems and systemic risk analysis ... each regulatory agency's macroprudential orientation reflects its particular sectoral mandate, which can limit the analysis of cross-sectoral effects and thereby constrain an overall view of systemic risks—as in the case of risks stemming from non-bank credit intermediation ... it is unclear how the agency-specific analytical

approaches fit together into an overall cohesive risk assessment framework.” See FSB, *supra* note 102, p. 24.

109Recovery and resolution plans may be used to simplify bank corporate structures, as complex organizational structures are rightfully viewed as an impediment to orderly resolution. See Avgouleas et al. (2013), pp. 210–18.

110Contingent convertible capital instruments (CoCos) are hybrid capital securities that absorb losses when the capital of the issuing bank falls below a certain level. Avdjiev et al. (2013).

111Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111/203 (2010).

112Directive 2014/59/EU establishing a framework for the recovery and resolution of credit institutions and investment firms, OJ 2014 L173/190 (hereinafter BRRD).

113See FSB (2015b); Basel Committee on Banking Supervision (BCBS) (2015).

114Goodhart (1988); Goodhart et al. (2010), p. 121.

115Fay & Parent (2004), pp. 53–9.

116Di Giorgio et al. (2000).

117Fay & Parent, *supra* note 115, p. 54.

118Di Giorgio et al., *supra* note 116, pp. 6–7.

119Goodhart et al. (1998), Chapter 8.

120 *Ibid.*

121Taylor (1995); Taylor (1996).

122See McDonald (1996).

123Goodhart & Schoenmaker (1995), p. 333.

124E.g. the US FRB states as two out of its four objectives: supervising and regulating banking institutions to ensure the safety and soundness of the nation’s banking and financial system and to protect the credit rights of consumers maintaining the stability of the financial system and containing systemic risk that may arise in financial markets. The other two are: “conducting the nation’s monetary policy by influencing the monetary and credit conditions in the economy in pursuit of maximum employment, stable prices, and moderate long-term interest rates ...— providing financial services to depository institutions, the U.S. government, and foreign official institutions, including playing a major role in operating the nation’s payments system.” See Board of Governors of the Federal Reserve System (2009).

125E.g. the Bank of England’s Financial Policy Committee (FPC), which has four independent members out of ten, with the rest coming from the Bank of England.

126See Financial Stability Oversight Council (2014).

127Board of Governors of the Federal Reserve System, *supra* note 124.

128See Bank of England (2016).

129For a restatement and a summary of the “financial instability hypothesis,” see Minsky (1992). The original conception is described in Minsky (1970). Minsky built on earlier works on the role of debt by two famous twentieth-century economists. See Keynes (1936); Fisher (1933).

130There is a fifth reason, which for now is inapplicable to China, in an environment of low interest rates and quantitative easing leverage ratios may be a way to stabilize the financial system by controlling excessive debt building up in the financial system.

131A term that was first coined in Avgouleas & Cullen (2015).

132D’Hulster (2009); see also Admati et al. (2014).

133A typical example is a loan guarantee, which is a contingent commitment that may materialize in the future but it does not presently appear in the balance sheet. D’Hulster, *supra* note 132, pp. 1–2.

134A simple example is a minority investment held by a bank in an equity fund that is itself funded by loans. While critical for the stability of the financial institutions and of the financial system, embedded leverage is extremely difficult to measure. *Ibid.*, pp. 2–3.

135“(93) ‘leverage’ means the relative size of an institution’s assets, off-balance sheet obligations and contingent obligations to pay or to deliver or to provide collateral, including obligations from received funding, made commitments, derivatives or repurchase agreements, but excluding obligations which can only be enforced during the liquidation of an institution, compared to that institution’s own funds; (94) ‘risk of excessive leverage’ means the risk resulting from an institution’s vulnerability due to leverage or contingent leverage that may require unintended corrective measures to its business plan, including distressed selling of assets which might result in losses or in valuation adjustments to its remaining assets.” See Prudential requirements for credit institutions and investment firms and amending Regulation (EU) 648 OJ 213 L.

136Banks were rated on the “BOPEC” system (the condition of the BHC’s Bank subsidiaries, Other non-bank subsidiaries, Parent company, Earnings, and Capital adequacy) to determine the level of capital required. Those banks that scored highly on this system were required to hold Tier 1 capital of 3% of RWAs, whilst those that scored poorly were required to hold 4%. These rules have since been updated. See Risk-Based Capital Guidelines: Market Risk, 77 Fed. Reg. 53,060 (Final Rule, Aug. 30, 2012) (12 C.F.R. pts. 3, 208, 225, 325, 217, 324).

137Admati et al., *supra* note 23.

138See Miles et al. (2011).

139 *Ibid.*

140Basel III, 61. The leverage ratio is defined as the quarterly average total assets less deductions that include goodwill, investments deducted from Tier 1 capital, and deferred taxes; see D’Hulster, *supra* note 132, pp. 2–4.

141As the BCBS has noted, “the [GFC] demonstrated that credit losses and writedowns come out of retained earnings, which is part of banks’ tangible common equity base.” See Basel III, 2.

142This section draws on research that was jointly carried out by Emilios Avgouleas and Jay Cullen.

143See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111/203 (July 21, 2010) Pub. L. No. 124 Stat. 1376 § 165.

144See Regulatory Capital Rules: Regulatory Capital, Enhanced Supplementary Leverage Ratio Standards for Certain Bank Holding Companies and Their Subsidiary Insured Depository Institutions, 79 Fed. Reg. 24,528 (Final Rule, May 1, 2014) (12 C.F.R pts. 6, 208, 217, 324), 62,030.

145 Ibid., pp. 62, 143.

146 Ibid.

147Dodd-Frank places a limit of 15:1 leverage for an institution with USD 50 billion of assets or more that poses a “grave threat to the financial stability of the US when such a limit would mitigate the threat.” See Dodd-Frank Act, § 165(j)(1). This limitation applies in very narrow circumstances, and is designed as a remedial, rather than a preventive, measure, triggered to contain a risk once it has been identified rather than to prevent risk from materializing.

148Office of The Superintendent of Financial Institutions Canada (2007); see also Crawford et al. (2009) on evaluating the impact of Canadian leverage regulations.

149Reports indicate that both banks are on course to meet the new leverage requirements. See SNB.org (2013).

150See FINMA (2011).

151See Miles & Ireland (2013).

152See Bank of England (2014).

153See Vickers (2011).

154This proposal won support from several leading UK central bankers, including Sir Mervyn King, former Governor of the Bank of England, and Andrew Haldane, Executive Director for Financial Stability at the Bank of England. Indeed, Haldane has argued for a leverage ratio of between 4% and 7%. See Haldane & Madouros (2012).

155Indicatively, see Fleming (2014).

156BCBS Basel III: A global regulatory framework for more resilient banks and banking systems.

157Fostel & Geanakoplos (2013). The authors have explained the cross-sectional implications of multiple leverage cycles, which invariably lead to contagion, flight to collateral, and swings in the issuance volume of the highest quality debt.

158 Ibid., p. 31.

159“Leverage cycle crashes always occur because of a coincidence of three factors. The bad news itself lowers the prices. But it also drastically reduces the wealth of the leveraged buyers, who were leveraged the most precisely because they are the most optimistic buyers. Thus the purchasing power of the most willing buyers is reduced. And most importantly, if the bad news also creates more uncertainty, then credit markets tighten and leverage will be reduced, just when the optimists would like to borrow more, making it much harder for the optimists and any potential new buyers to find funding.” Ibid., p. 28.

160Brunnermeier & Pedersen (2009).



161 “A Leverage Cycle is a feedback between asset prices and leverage, whereas a Credit Cycle is a feedback between asset prices and borrowing.” Of course, a leverage cycle always produces a credit cycle. But the opposite is not true. See Fostel & Geanakoplos, *supra* note 157.

162 See D’Hulster, *supra* note 132.

163 Geanakoplos (2010a).

164 “Bubbles” are a ubiquitous phenomenon in modern capitalist development. The bubble taxonomy has been described as: “The process is characterised by competitive herd behaviour which [...] produce[s] widespread and gross asset mispricing which [is] eventually and dramatically corrected.” See Kay (2010). For a detailed description and explanation of the many bubbles to afflicted asset markets throughout history, see Kindleberger & Aliber (2005).

165 Adrian & Shin (2010).

166 Delis et al. (2011).

167 *Ibid.*

168 Shleifer & Vishny (2011).

169 If a bank loses USD 1 million and equity capital stands at 3% of its balance sheet, then the bank attempting to deleverage must liquidate more than USD 33 million-worth of assets just to maintain that 3% ratio.

170 Gennaioli et al. (2010).

171 BCBS, 189, 69.

172 Fostel & Geanakoplos, *supra* note 157.

173 Turner (2010).

174 Geanakoplos (2010b).

175 Albertazzi & Gambacorta (2009), pp. 393–409.

176 Laeven & Levine (2009), p. 259; Chen et al. (2006), p. 30; Saunders et al. (1990), p. 643.

177 Avgouleas & Cullen, *supra* note 131.

178 “[I]n benign markets with no recent history of negative events managers will potentially take high risks, as they essentially underestimate low-probability, high-risk events .... The reward structures currently observed in the banking and investment industry can play their part in cyclical risk taking because they exacerbate the short-term focus and provide incentives for disaster myopia.” See Financial Services Authority (2009), 4.24–4.27.

179 Avgouleas (2011).

180 Borio (2014).

181 See Modigliani & Miller (1958).

182 The non-conformity in risk between bank debt and bank equity is, of course, compounded by the fact that debt instruments are afforded generous tax treatment; see Stone (1967), p. 42.

183Furthermore, if a bank is forced to raise funds externally, its shareholders will prefer the raising of debt to equity, as any increase in equity funding will dilute their shareholdings. This largely refutes the “capital structure irrelevance principle” first proposed by Modigliani & Miller, *supra* note, 181.

184For a rejoinder to this argument, see Admati et al. (2011).

185On this issue, see Avgouleas & Goodhart (2015).

186Keeley & Furlong (1990).

187Shareholder preference for debt is independent of any too-big-to-fail subsidies in Admati et al. (2012) model and this assumption is pretty sound.

188 *Ibid.*

189 *Ibid.*

190 *Ibid.*

191Acharya et al. (2010a).

192Kahane (1977); Koehn & Santomero (1980).

193Bradley et al. (1991); Kim & Santomero (1988).

194Discussed in detail in Section 4; see Goodhart (2011).

195See Hanson et al. (2011); Stein (2011).

196Myers, *supra* note 2.

197See also Occhino & Pescatori (2010).

198E.g. reported commercial bank leverage was largely unchanged between 2000 and 2009; see Kalemli-Ozcan et al. (2012).

199Simkovic (2009).

200Hunt (2009).

201E.g. it was documented by the lead counsel in the Lehman Brothers bankruptcy case that Lehman systematically attempted to conceal its true leverage ratio by using accounting techniques to remove liabilities from the core bank to its special-investment vehicles (SIVs). This allowed Lehman to build up unreported leverage and remove debt from its balance sheet, “to create a materially misleading picture of the firm’s financial condition in late 2007 and 2008.” See US Bankruptcy Court of the District of New York (2010).

202For detailed discussion, see *infra*.

203See also on this Wachter (2015).

204Acharya et al. (2010b).

205In theory, short-term debt can enforce market discipline through the threat of withdrawal of funding; see Calomiris & Kahn (1991).

206US depository institutions increasingly funded their total assets by borrowing in short-term debt markets. In the 1960s, approximately 2% of US banks' balance sheets were funded in these markets and, by 2008, this had reached 22%; see Blair (2013).

207See Financial Services Authority, *supra* note 178.

208Brunnermeier (2009).

209Gorton & Metrick (2012).

210E.g. in 2007, Citigroup was responsible for 25% of the market in SIVs. Its biggest SIV, Centauri, had lent out USD 21 billion before the credit crunch. It was not included in the consolidated accounts of Citigroup plc in 2006. Citigroup announced write-downs in 2008 of approximately USD 41 billion. See IMF (2008), pp. 67–8, Fig. 2.2.

211Bailey (2013); Barclay's Equity Research (2012a).

212Barclay's Equity Research (2012b).

213This is how the Financial Times has reported these discrepancies: "The UK's five biggest banks are considered among the best capitalized in Europe on the traditional measure of core tier one equity divided by risk-weighted assets .... The ratios range from 12.3 per cent at HSBC down to 10.3 per cent at Royal Bank of Scotland. The disclosed leverage ratios strip out the effect of risk modelling, which has the effect of more than doubling the size of every bank's balance sheet and more than tripling that of Barclays .... [The] unvarnished look at each bank's borrowing produces far different results. As of December 31, Standard Chartered had the strongest ratio at 4.5 per cent, meaning that it has assets equal to 22 times its capital. Barclays has the weakest, with 2.8 per cent. That means Barclays had assets worth more than 35 times its capital base." See Masters (2013).

214BCBS (2013).

215See Ingves (2013), p. 6.

216Blundell-Wignall & Atkinson (2011). These variations are surely intolerable in an era of global banking.

217As noted by Laurence Kotlikoff: "When trust takes a holiday, creditors find no comfort in capital ratios ... banks' opacity makes it impossible to verify if their capital ratios are as high as advertised." See Kotlikoff (2012), p. 27.

218See on this Avgouleas, *supra* note 179, pp. 71–110.

219See Blundell-Wignall & Roulet (2013). For this study, the OECD examined a sample of 94 US and EU internationally active commercial banks and broker dealers with market capitalizations of over USD 5 billion, over the period 2004–11.

220 *Ibid.*, p. 16.

221Haldane & Madouros, *supra* note 154, p. 14.

222E.g. the latest FSB Peer Review Report, p. 8, notes: "The authorities have improved their monitoring of non-bank credit intermediation in recent years and have taken steps to contain identified risks, both at the State Council/JMC level and by individual regulatory agencies."

223See Hess (2014).

224 Notice of the China Banking Regulatory Commission on Regulating the Investment Operations of the Wealth Management Business of Commercial Banks “Notice No. 8.”

225 See Clifford Chance, *supra* note 89, p. 5.

226 The CBRC has issued guidance with the view to making sure that the incentivizing compensation policies adopted by a commercial bank would not encourage imprudent risk-taking. Incentivizing compensation arrangements shall provide employees with incentives compatible with effective controls and risk management, and should be supported by strong corporate governance, including active and effective board oversight. CBRC Corporate Governance Guidelines, Arts 94–100, in conjunction with CBRC, Guidelines for Supervision on Steady Remuneration of Commercial Banks of 1 March 2010.

227 See Zhou (2016), p. 48.

228 See FSB, *supra* note 102, pp. 5–8.

229 *Ibid.*, p. 7.

230 *Ibid.*, p. 26.

231 The Report by the Minneapolis Federal Reserve Bank to eliminate too-big-to-fail institutions includes, *inter alia*, a proposal requiring all BHCs larger than USD 250 billion would be required to increase loss-absorbing capital to 23.5% of RWAs. Unlike current regulations, banks would only be allowed to count common equity towards that threshold and not long-term debt. See FRB (2016). The report was based on interactions between leading experts in series of four symposia. The author was invited to participate in the fourth symposium, where he explained the risks of bondholder bail-ins.

232 The PRC authorities acknowledging the importance of this tool have overhauled it several times. Xinhua Finance Agency (2015).

233 See Reuters (2016a); CCTV.com (2016).

234 For comparisons, see the early-intervention framework of the EU. see Art. 27 et seq. BRRD.

235 See BIS (2016).

236 See Cham (2014).

237 In principle, such a development should be seen as a very welcome step by PRC authorities. E.g., on 5 July 2013, the State Council promulgated the Guideline Opinions on Economic Structural Adjustment and Transformation and Upgrading with Support from the Financial Sector, calling for stronger and more targeted support from the financial sector for China’s real economy, by such ways as, *inter alia*, inviting private capital into the financial sector, especially using private capital to establish wholly privately owned banks. On 11 March 2014, the CBRC announced that it would roll out a “pilot project” to set up five wholly privately owned banks before the practice was extended to more places. In July and September 2014, the first batch of five banks was approved by the CBRC to be established in Tianjin, Shanghai, Zhejiang Province, and Guangdong Province. On 22 June 2015, the State Council Office published the Notice of CBRC on the Guidelines for Promoting the Development of the Wholly Privately Owned Banks (hereinafter the “Private Bank Guidelines”), setting out the entry limit on and detailed procedures for organizing a wholly privately owned bank.

238E.g. Bloomberg.com, supra note 25, notes: “Some smaller banks even seem to have adopted the risk-taking approach of shadow bankers.”

239Gale (2010).

240See, in general, Schoenmaker (2014).

241D’Hulster, supra note 132, p. 4.

242 Ibid.

243Smith & Stulz (1985).

244Chesney et al. (2011).

245See on this practice Balding (2016).

246The PRC government has already introduced initiatives that lead towards interest-rate liberalization. Lower interest rates are a much more potent instrument for improving both the deposit levels of PRC banks and the quality of lending than any of the current lending restrictions.

247See Shen (2016a) on RMB liberalization.

## References

Viral V. Acharya , Hamid Mehran & Anjan V. Thakor (2010a) “Caught between Scylla and Charybdis? Regulating Bank Leverage When There Is Rent Seeking and Risk Shifting,” Federal Reserve Bank of New York, Staff Report No. 469.

Viral Acharya , Philipp Schnabl & Gustavo Suarez (2010b) “Securitization without Risk Transfer,” NBER, Working Paper 15730, February.

Viral V. Acharya , Jun Qian & Zhishu Yang (2016) “In the Shadow of Banks: Wealth Management Products and Issuing Banks’ Risk in China,” Mimeo, Tsinghua/Stern (February), online <[http://cfrc.pbcsf.tsinghua.edu.cn/Public/Uploads/paper/day\\_160328/20160328131853523.pdf](http://cfrc.pbcsf.tsinghua.edu.cn/Public/Uploads/paper/day_160328/20160328131853523.pdf)> (last accessed 20 January 2017).

Anat Admati , Peter DeMarzo Martin Hellwig & Paul Pfleiderer (2012) “Debt Overhang and Capital Regulation,” Rock Center for Corporate Governance at Stanford University, Working Paper Series No. 114, preprints of the Max Planck Institute for Research on Collective Goods No. 2012/5. Stanford: Bonn.

Anat Admati , Peter DeMarzo Martin Hellwig & Paul Pfleiderer (2013) “Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity Is Not Expensive,” Stanford Business School, Working Paper No. 2065.

Anat Admati , Peter DeMarzo Martin Hellwig & Paul Pfleiderer (2014) “The Leverage Ratchet Effect,” Rock Center for Corporate Governance at Stanford University, Working Paper No. 146, May.

Anat R. Admati , Peter M. DeMarzo Martin F. Hellwig & Paul C. Pfleiderer (2011) [revised 2013] “Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity Is Not Expensive,” online <<https://www.gsb.stanford.edu/sites/default/files/research/documents/Fallacies%20Nov%201.pdf>> (last accessed 20 January 2017).

Anat Admati , P.M. DeMarzo M.F. Hellwig & P.C. Pfleiderer (2014) "The Leverage Ratchet Effect," Rock Center for Corporate Governance at Stanford University Working Paper No. 146, May.

Tobias Adrian , & Hyun S. Shin (2010) "Liquidity and Leverage." 19 Journal of Financial Intermediation 418–437.

Ugo Albertazzi , & Leonardo Gambacorta (2009) "Bank Profitability and the Business Cycle." 5 Journal of Financial Stability 393–409.

Franklin Allen , Yiming Qian Guoqian Tu & Frank Yu (2015) "Entrusted Loans: A Close Look at China's Shadow Banking System," Mimeo, Wharton School, University of Pennsylvania.

Paul Armstrong-Taylor (2016) Debt and Distortion, New York: Palgrave Macmillan.

Douglas W. Arner , & Janos Barberis (2015) "The Evolution of Fintech: A New Post-Crisis Paradigm?," University of Hong Kong Faculty of Law, Research Paper No. 2015/047.

Stefan Avdjiev (2013) "CoCos: A Primer." BIS Quarterly Review, September, 43–58.

Emilios Avgouleas (2015a) "Regulating Financial Innovation," in E. Ferran et al. eds., Oxford Handbook of Financial Regulation, Oxford: Oxford University Press, 2015, 659–689.

Emilios Avgouleas (2011) "The Vexed Issue of Short Sales Regulation and the Global Financial Crisis," in K. Alexander & N. Maloney, eds., Law Reform and Financial Markets, Cheltenham: Edward Elgar Publishing, 71–110.

Emilios Avgouleas (2015b) "Bank Leverage Ratios and Financial Stability: A Micro- and Macroprudential Perspective," Levy Economics Institute, Working Paper No. 849.

Emilios Avgouleas (2016) "Large Systemic Banks and Fractional Reserve Banking: Intractable Dilemmas in Search of Effective Solutions," in R. Buckley, E. Avgouleas, & D. Arner, eds., Reconceptualising Global Finance and Its Regulation, Cambridge: Cambridge University Press, 659–689.

Emilios Avgouleas , & Jay Cullen (2015) "Excessive Leverage and Bankers' Pay: Governance and Financial Stability Costs of a Symbiotic Relationship." 21 Columbia Journal of European Law 1–46.

Emilios Avgouleas , & Charles Goodhart (2015) "Critical Reflections on Bank Bail-Ins." 1 Journal of Financial Regulation 1–27.

Emilios Avgouleas , Charles Goodhart & Dirk Schoenmacker (2013) "Living Wills as a Catalyst for Global Financial Reform." 9 Journal of Financial Stability 210–218.

Andrew Bailey (2013) "Bank of England 2012 Financial Stability Report," testimony before the Treasury Select Committee, UK House of Commons, 15 January.

Christopher Balding (2016) "The Shadow Looming Over China," online <<https://www.bloomberg.com/view/articles/2016-06-06/china-s-shadow-banks-now-pose-a-systemic-risk>> (last accessed on 20 February 2017).

Bank for International Settlements (1999) "Strengthening the Banking System in China: Issues and Experiences," in Y.K. Mo, ed., A Review of Recent Banking Reforms, BIS Policy Papers, 1027–6297.

Bank of England (2014) "The Financial Policy Committee's Review of the Leverage Ratio," online <[http://www.bankofengland.co.uk/financialstability/Documents/fpc/fs\\_lrr.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/fs_lrr.pdf)> (last accessed 20 January 2017).

Bank of England (2016) "Prudential Regulation Authority," online <<http://www.bankofengland.co.uk/pr/Pages/default.aspx>> (last accessed 20 January 2017).

Barclay's Equity Research (2012a) "Bye Bye Basel? Making Basel More Relevant," 23 May.

Barclay's Equity Research (2012b) "The Dog That Dug: (Yet) More Digging Into RWAs," 21 September.

BCBS (2013) "Regulatory Consistency Assessment Programme—Analysis of Risk-Weighted Assets for Market Risk," January.

BCBS (2015) "Consultative Document—TLAC Holdings," online <<http://www.bis.org/bcbs/publ/d342.pdf>> (last accessed 5 January 2017).

Ben S. Bernanke (2012) "Some Reflections on the Crisis and the Policy Response," online <<http://www.federalreserve.gov/newsevents/speech/bernanke20120413a.htm>> (last accessed 5 January 2017).

BIS (2016) "86th Annual Report 2015/16," online <<http://www.bis.org/publ/arpdf/ar2016e5.pdf>> (last accessed 17 February 2017).

Margaret M. Blair (2013) "Leverage and Private Sector Money Creation." 36 Seattle University Law Review 417–454.

Bloomberg.com (2016a) "China Toxic Debt Solution Has One Big Problem," online <<https://www.bloomberg.com/news/articles/2016-06-02/china-toxic-debt-solution-has-one-big-problem-as-banks-buy-npls>> (last accessed 17 February 2017).

Bloomberg.com (2016b) "Four Fresh Worries About China's Shadow Banking System—Draft Rules Seeking to Shore up the \$3.9 Trillion Market for Wealth Management Products Underscore a Bunch of New Worries," online <<https://www.bloomberg.com/news/articles/2016-09-07/four-fresh-worries-about-china-s-shadow-banking-system>> (last accessed 17 February 2017).

Adrian Blundell-Wignall , & Paul E. Atkinson (2011) "Global SIFIs, Derivatives and Financial Stability." 2011/1 OECD Journal of Financial Market Trends 167–200.

Adrian Blundell-Wignall , & Caroline Roulet (2013) "Business Models of Banks, Leverage and the Distance-to-Default." 2012/2 OECD Journal of Financial Market Trends 7–34.

Board of Governors of the Federal Reserve System (2009) "Mission," online <<http://www.federalreserve.gov/aboutthefed/mission.htm>> (last accessed 17 February 2017).

Claudio E. Borio (2014) "Monetary Policy and Financial Stability: What Role in Prevention and Recovery?," BIS, Working Paper No. 440, January.

Nicholas Borst , & Nicholas Lardy (2015) "Maintaining Financial Stability in the People's Republic of China during Financial Liberalization," ADB, Working Paper No. 15–4.

Michael Bradley , Carol A. Wambeke & David A. Whidbee (1991) "Risk Weights, Risk-Based Capital, and Deposit Insurance." 15 Journal of Banking and Finance 875–893.

Markus K. Brunnermeier (2009) "Deciphering the Liquidity and Credit Crunch 2007–2008." 23 *Journal of Economic Perspectives* 77–100.

Markus K. Brunnermeier , & Lasse H. Pedersen (2009) "Market Liquidity and Funding Liquidity." 22 *Review of Financial Studies* 2201–2238.

Markus Brunnermeier , Charles Goodhart Avinash Persaud & Hyun Song Shin (2009) "The Fundamental Principles of Financial Regulation." 5–6 *Geneva Reports on the World Economy*, 7 May.

Charles W. Calomiris , & Charles M. Kahn (1991) "The Role of Demandable Debt in Structuring Optimal Banking Arrangements." 81 *American Economic Review* 497–513.

CCTV.com (2016) "Banks to Count Off-balance Sheet WMPs in Risk-Assessment," online <<http://english.cctv.com/2016/12/20/VIDEGnr5T4D9QrUsGwwCYmlu161220.shtml>> (last accessed on 20 February 2017).

Engen Cham (2014) "China Considering Raising Leverage Ratio for Banks," online <<http://www.reuters.com/article/china-banks-leverage-ratios-idUSL3N0TB1WM20141121>> (last accessed 20 January 2017).

Carl R. Chen , Thomas L. Steiner & Ann M. Whyte (2006) "Does Stock-Option-Based Compensation Induce Risk-Taking? An Analysis of the Banking Industry." 30 *Journal of Banking and Finance* 915–945.

Maric Chesney , Jacob Stromberg & Alexander F. Wagner (2011) "Risk-taking Incentives, Governance, and Losses in the Financial Crisis," University of Zurich Swiss Financial Institute, Working Paper No. 10–18.

Clifford Chance (2015) "Shadow Banking and Recent Regulatory Developments in China," January Client Briefing Note.

Allan Crawford , Christopher Graham & Étienne Bordeleau (2009) "Regulatory Constraints on Leverage: The Canadian Experience." 45 *Bank of Canada Financial System Review* 45–50.

Katia D’Hulster (2009) "The Leverage Ratio: A New Binding Limit on Banks," online <<http://www.worldbank.org/financialcrisis/pdf/leverage-ratio-web.pdf>> (last accessed 20 February 2017).

Tri Vi Dang , Honglin Wang & Aidan Yao (2014) "Chinese Shadow Banking: Bank-Centric Misperceptions," HKIMR, Working Paper No. 22/201.

James Daniel , José Garrido & Marina Moretti (2016) "Debt-Equity Conversions and NPL Securitization in China—Some Initial Considerations," 16/05 IMF Technical Note.

Harry DeAngelo , & René M. Stulz (2013) "Why High Leverage Is Optimal for Banks," online <<http://fic.wharton.upenn.edu/fic/papers/13/13-20.pdf>> (last accessed 20 November 2016).

Manthos Delis , Kien C. Tran & Efthymios G. Tsionas (2011) "Quantifying and Explaining Parameter Heterogeneity in E-Capital Regulation-Bank Risk Nexus." 8 *Journal of Financial Stability* 57–68.

Julian Du , Chang Li & Yongqin Wang (2016) "Shadow Banking Activities in Non-Financial Firms: Evidence from China," online <[http://www.cuhk.edu.hk/fin/event/symposium/SEFM\\_2016\\_paper\\_44.pdf](http://www.cuhk.edu.hk/fin/event/symposium/SEFM_2016_paper_44.pdf)> (last accessed 3 February 2017).



Jim Edwards (2016) "China May Have \$2 Trillion in Hidden Bad Debt—10 Times More than Official Numbers Report," online <<http://www.businessinsider.com/china-debt-npl-greater-than-official-numbers-report-2016-9>> (last accessed 20 January 2017).

Douglas Elliott , Arthur R. Kroeber & Qiao Yu (2015) "Shadow Banking in China: A Primer," Economic Studies at Brookings, March.

Christine Fay , & Nicolas Parent (2004) "The Organizational Structure of Financial Market Regulation: Highlights from the Literature." Financial System Review 53–59.

Financial Services Authority (2009) "The Turner Review: A Regulatory Response to the Global Financial Crisis," online <[http://www.fsa.gov.uk/pubs/other/turner\\_review.pdf](http://www.fsa.gov.uk/pubs/other/turner_review.pdf)> (last accessed 20 January 2017).

Financial Stability Oversight Council (2014) "FSOC Member Agencies," online <<https://www.treasury.gov/initiatives/fsoc/about/council/Pages/default.aspx>> (last accessed 20 January 2017).

FINMA (2011) "Addressing Too Big to Fail: The Swiss SIFI Policy (2011)," online <<http://www.finma.ch/e/finma/publikationen/Documents/be-swiss-SIFI-policy-june-2011-summary-20110624-e.pdf>> (last accessed 20 January 2017).

Irving Fisher (1933) "The Debt Deflation Theory of Great Depressions." 1 *Econometrica* 337–357.

Sam Fleming (2014) "Banks Breathe Sigh of Relief Over UK Leverage Ratio," Financial Times, 31 October.

Ana Fostel , & John Geanakoplos (2013) "Reviewing the Leverage Cycle," Cowles Foundation, Discussion Paper No. 1918, September.

FRB Minneapolis (2016) "The Minneapolis Plan to End Too Big to Fail," online <<https://www.minneapolisfed.org/~media/files/publications/studies/endingtbtft/the-minneapolis-plan/the-minneapolis-plan-to-end-too-big-to-fail-2016.pdf?la=en>> (last accessed 2 December 2016).

FSB (2015a) "Peer Review of China—Review Report," online <<http://www.fsb.org/2015/08/peer-review-of-china/>> (last accessed 5 January 2017).

FSB (2015b) "Total Loss-Absorbing Capacity (TLAC) Principles and Term Sheet," online <<http://www.fsb.org/wp-content/uploads/TLAC-Principles-and-Term-Sheet-for-publication-final.pdf>> (last accessed 5 January 2017).

Douglas Gale (2010) "Capital Regulation and Risk-Sharing." 6 *International Journal of Central Banking* 187–204.

John Geanakoplos (2010a) "Solving the Present Crisis and Managing the Leverage Cycle." Federal Reserve Bank of New York Economic Policy Review 101–131.

John Geanakoplos (2010b) "The Leverage Cycle," in D. Acemoglu, K. Rogoff, & M. Woodford, eds., *NBER Macroeconomics Annual 2009*, Vol. 24, Chicago: University of Chicago Press, 1–65.

Nicola Gennaioli , Andrei Shleifer & Robert W. Vishny (2010) "Neglected Risks, Financial Innovation, and Financial Fragility," FEEM, Working Paper No. 114.2010, October.

Di Giorgio Giorgio , Carmine Di Noia & Laura Piatti (2000) "Financial Market Regulation: The Case of Italy and a Proposal for the Euro Area," Wharton, Financial Institutions Center, University of Pennsylvania, Working Paper 00–24.

Charles Goodhart (1988) *The Evolution of Central Banks*, Cambridge: MIT Press.

Charles Goodhart (2011) "Global Macroeconomic and Financial Supervision: Where Next?," NBER, Working Paper No. 17682.

Charles Goodhart , & Dirk Schoenmaker (1995) "Institutional Separation between Supervisory and Monetary Agencies," in C. Goodhart, ed., *The Central Bank and the Financial System*, London: Macmillan Press, 333–413.

Charles Goodhart , & Dimitrios Tsomokos (2010) "Analysis of Financial Stability," in P.L. Siklos, et al., *Challenges in Central Banking*, Cambridge: Cambridge University Press, 121–145.

Charles Goodhart , Philipp Hartmann David Llewellyn & Liliana Rojas-Suarez (1998) *Financial Regulation: Why, How and Where Now?*, London: Routledge.

Gary Gorton , & Andrew Metrick (2012) "Securitized Banking and the Run on Repo." 104 *Journal of Financial Economics* 425–451.

Andrew G. Haldane & Vasileios Madouros (2012) "The Dog and the Frisbee," presented at the Federal Reserve Bank of Kansas City's 36th Economic Policy Symposium, "The Changing Policy Landscape," Jackson Hole, WY, 31 August 2012.

Samuel G. Hanson , Anil K. Kashyap & Jeremy C. Stein (2011) "A Macroprudential Approach to Financial Regulation." 25 *Journal of Economic Perspectives* 3–28.

Martin F. Hellwig (2014) "Financial Stability, Monetary Policy, Banking Supervision, and Central Banking," online <[http://www.coll.mpg.de/pdf\\_dat/2014\\_09online.pdf](http://www.coll.mpg.de/pdf_dat/2014_09online.pdf)> (last accessed 20 November 2016).

Patrick Hess (2014) "China's Financial System: Past Reforms, Future Ambitions and Current State." 38 *Springer International Publishing* 21–41.

Barry Hsu , Douglas Arner & Qun Wan (2007) "Policy Functions as Law: Legislative Forbearance in China's Asset Management Companies." 23 *UCLA Pacific Basin Law Journal* 129–171.

Robin Hui Huang (2015) "The Regulation of Shadow Banking in China: International and Comparative Perspectives." 30 *Banking and Finance Law Review* 481–503.

John P. Hunt (2009) "Credit Rating Agencies and the 'Worldwide Credit Crisis': The Limits of Reputation, the Insufficiency of Reform, and a Proposal for Improvement." 1 *Columbia Business Law Review* 109–209.

IMF (2008) "Global Financial Stability Report: Containing Systemic Risks and Restoring Financial Soundness," online <<https://www.imf.org/External/Pubs/FT/GFSR/2008/01/pdf/text.pdf>> (last accessed 3 February 2017).

IMF (2014) "Global Financial Stability Report (GFSR), Risk Taking, Liquidity, and Shadow Banking: Curbing Excess While Promoting Growth," online <<https://www.imf.org/external/pubs/ft/gfsr/2014/02/pdf/c1.pdf>> (last accessed 3 February 2017).

IMF (2016) "Global Financial Stability Report (GSFR), Fostering Stability in a Low-Growth, Low-Rate Era," online <<https://www.imf.org/external/pubs/ft/gfsr/2016/02/>> (last accessed 3 February 2017).

Stefan Ingves (2013) "From Ideas to Implementation," online <<http://www.bis.org/review/r130124a.pdf>> (last accessed 11 February 2017).

Yehuda Kahane (1977) "Capital Adequacy and the Regulation of Financial Intermediaries." 1 Journal of Banking and Finance 207–218.

Sebnem Kalemli-Ozcan , Bent Sorensen & Sevcan Yesiltas (2012) "Leverage Across Firms, Banks and Countries." 88 Journal of International Economics 284–298.

John Kay (2010) "Should We Have 'Narrow Banking'?" online <<https://www.johnkay.com/2011/06/02/should-we-have-narrow-banking/>> (last accessed 3 February 2017).

Michael C. Keeley , & Frederick T. Furlong (1990) "A Reexamination of the Mean-Variance Analysis of Bank Capital Regulation." 14 Journal of Banking and Finance 69–84.

John M. Keynes (1936) *The General Theory of Employment, Interest, and Money*, London: Palgrave MacMillan.

Daesik Kim , & Anthony M. Santomero (1988) "Risk in Banking and Capital Regulation." 43 Journal of Finance 1219–1233.

Charles P. Kindleberger , & Robert Z. Aliber (2005) *Manias, Panics and Crashes: A History of Financial Crises*, 5th edn, Basingstoke: Palgrave MacMillan.

Nobuhiro Kiyotaki , & John Moore (1997) "Credit Cycles." 105 Journal of Political Economy 211–248.

Michael Koehn , & Anthony M. Santomero (1980) "Regulation of Bank Capital and Portfolio Risk." 35 Journal of Finance 1235–1244.

Laurence Kotlikoff (2012) "Vickers Is Not Enough to Stop Another Libor Scandal," *Financial Times*, 9 July.

Man-ki Kwong (2012) "'Mainland Banks' Bad Loans Worse than Expected," *South China Morning Post*, 19 December.

Luc Laeven , & Ross Levine (2009) "Bank Governance, Regulation and Risk Taking." 93 Journal of Financial Economics 259–275.

Xiaomin Lai (2016) "Chairman of China Huarong Asset Management: Bad Loans to Grow as Disposal Becomes Harder," *South China Morning Post*, 31 August.

Emily Lee (2015) "Shadow Banking System in China after the Global Financial Crisis—Why Shadow Banks Can Distort the Capital Market Order." 3 *Peking University Law Journal* 361–384.

Justina Lee (2016) "China's Shadow Banking Evolves to Dodge Crackdown," online <<https://www.bloomberg.com/news/articles/2016-02-24/china-shadow-banking-dodges-crackdown-as-funds-take-trusts-role>> (last accessed 23 January 2017).

Min Liao , Tao Sun & Jinfan Zhang (2016) "China's Financial Interlinkages and Implications for Inter-Agency Coordination," IMF, Working Paper WP/16/203.

- Lin Lin (2016) "Managing the Risks of Equity Crowdfunding: Lessons from China," NUS, Centre for Banking and Finance Law, Working Paper, December.
- David Lipton (2016) "Rebalancing China: International Lessons in Corporate Debt," presented at Sustainable Development in China and the World, IMF China Economic Society Conference, 11 June 2016.
- Guonan Ma (2006) "Who Pays China's Bank Restructuring Bill?," CEPIL, Working Paper, No. 2006-4.
- Guonan Ma , & Ben S.C. Fung (2002) "China's Asset Management Corporations," 115 BIS Working Papers.
- Wojciech Maliszewski , Serkan Arslanalp John Caparusso José Garrido Ai Guo Joong Kang Lam Shik W. Raphael T. Daniel Law Wei Liao Nadia Rendak Philippe Wingender Jiangyan Yu & Longmei Zhang (2016) "Resolving China's Corporate Debt Problem," online <<https://www.imf.org/external/pubs/ft/wp/2016/wp16203.pdf>> (last accessed 3 January 2017).
- Brooke Masters (2013) "The Leverage Story Banks Want to Hide," online <<http://www.ft.com/cms/s/0/3c660d16-a02e-11e2-88b6-00144feabdc0.html#axzz2jKlBdtl9>> (last accessed 3 February 2017).
- Paul McCulley (2007) "Teton Reflections," online <[http://media.pimco-global.com/pdfs/pdf\\_sg/GCB%20Focus%20Sept%2007%20SGP-HK.pdf?WT.cg\\_n=PIMCO-SINGAPORE&WT.ti=GCB Focus Sept 07 SGP-HK.pdf](http://media.pimco-global.com/pdfs/pdf_sg/GCB%20Focus%20Sept%2007%20SGP-HK.pdf?WT.cg_n=PIMCO-SINGAPORE&WT.ti=GCB%20Focus%20Sept%2007%20SGP-HK.pdf)> (last accessed 3 February 2017).
- Oonagh McDonald (1996) "Financial Regulation in Germany and the UK: A Comparison," LSE Financial Markets Group, Special Paper series, Special Paper 82, February.
- David Miles , Jing Yang & Gilberto Marcheggiano (2011) "Optimal Bank Capital," CEPR, Discussion Paper No. 8333, April.
- Tom Miles , & Louise Ireland (2013) "UBS Chief Says Swiss Plan to Raise Leverage Ratio Is Unrealistic," online <<http://www.reuters.com/article/2013/12/15/us-swiss-banksidUSBRE9BE03X20131215>> (last accessed 3 February 2017).
- H.P. Minsky (1970) "Financial Instability Revisited: The Economics of Disaster – Fundamental Reappraisal of the Discount Mechanism." Board of Governors of the Federal Reserve System.
- H.P. Minsky (1992) "The Financial Instability Hypothesis." Levy Economics Institute of Bard College Working Paper No. 74.
- Franco Modigliani , & Merton H. Miller (1958) "The Cost of Capital, Corporate Finance and the Theory of Investment." 48 American Economic Review 261–297.
- Moody's Investors Service (2016) "Negative Outlook on China's Banking System Driven by Challenging Operating Environment and Deteriorating Asset Quality and Profitability," Credit Research Report, 31 May.
- Stewart C. Myers (1977) "The Determinants of Corporate Borrowing." 5 Journal of Financial Economics 147–175.
- Filippo Occhino , & Andrea Pescatori (2010) "Debt Overhang in a Business Cycle Model," online <<http://www.clevelandfed.org/research/workpaper/2010/wp1003.pdf>> (last accessed 26 October 2016).

PBOC.org (2015) "Deposit Insurance Act," online  
<<http://www.pbc.gov.cn/tiaofasi/144941/144953/2811354/index.html>> (last accessed 17 February 2017).

Reuters (2016a) "China to Count Off-Balance Sheet Financing in Assessing Banks' Risk," online  
<<http://www.cnbc.com/2016/10/26/chinas-central-bank-takes-more-steps-to-tackle-rising-debt-in-the-economy.html>> (last accessed 17 February 2017).

Reuters (2016b) "China's Non-Performing Loans Hit 11-Year High—Regulator," online  
<<http://www.reuters.com/article/china-economy-loans-idUSL3N18935N>> (last accessed 27 January 2017).

Anthony Saunders , Elizabeth Strock & Nickolaos Travlos (1990) "Ownership Structure, Deregulation, and Bank Risk Taking." 45 *Journal of Finance* 643–654.

Dirk Schoenmaker (2014) "Regulatory Capital: Why Is It Different?," Mimeo, Duisenberg School of Finance, November.

Steven L. Schwarcz (2016) "Shadow Banking and Regulation in China and Other Developing Countries," online  
<[http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=6393&context=faculty\\_scholarship](http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=6393&context=faculty_scholarship)> (last accessed 20 January 2017).

Wei Shen (2015) "Wealth Management Products in the Context of China's Shadow Banking: Systemic Risks, Consumer Protection and Regulatory Instruments." 23 *Asia Pacific Law Review* 91–123.

Wei Shen (2016a) "Competing for Renminbi: Financial Centers in the Context of Renminbi Globalization," in R. Buckley, E. Avgouleas, & D. Arner, eds., *Reconceptualising Global Finance and its Regulation*, Cambridge: Cambridge University Press, 191–192.

Wei Shen (2016b) *Shadow Banking in China: Risk, Regulation and Policy*, Cheltenham: Elgar Publishing.

Hyun Song Shin , & Yi Zhao (2013) "Firms as Surrogate Intermediaries: Evidence from Emerging Economies," online  
<[http://www.princeton.edu/~hsshin/www/Firms\\_as\\_surrogate\\_intermediaries.pdf](http://www.princeton.edu/~hsshin/www/Firms_as_surrogate_intermediaries.pdf)> (last accessed 3 February 2017).

Andrei Shleifer , & Robert W. Vishny (2011) "Fire Sales in Finance and Macroeconomics." 25 *Journal of Economic Perspective* 29–48.

Tara Siegel Bernard (2008) "Money Market Funds Enter a World of Risk," online  
<<http://www.nytimes.com/2008/09/18/business/yourmoney/18money.html>> (last accessed 17 January 2017).

Michael Simkovic (2009) "Secret Liens and the Financial Crisis of 2008." 83 *American Bankruptcy Law Journal* 253–295.

Clifford W. Smith , & René M. Stulz (1985) "The Determinants of Firms' Hedging Policies." 20 *Journal of Financial and Quantitative Analysis* 391–405.

SNB.org (2013) "Swiss National Bank Financial Stability Report 5," online  
<[http://www.snb.ch/en/mmr/reference/stabrep\\_2013/source/stabrep\\_2013.en.pdf](http://www.snb.ch/en/mmr/reference/stabrep_2013/source/stabrep_2013.en.pdf)> (last accessed 20 January 2017).

Jeremy C. Stein (2011) "Monetary Policy as Financial-Stability Regulation," NBER, Working Paper No. 16883.

Richard B. Stone (1967) "Debt-Equity Distinctions in the Tax Treatment of the Corporation and its Shareholders." 42 Tulane Law Review 251–262.

Michael Taylor (1995) *Twin Peaks: A Regulatory Structure for the New Century*, London: Centre for the Study of Financial Innovation.

Michael Taylor (1996) *Peak Practice: How to Reform the UK's Regulatory System*, London: Centre for the Study of Financial Innovation.

The Economist (2004) "Botox Shot: Injections of Capital May Soon Wear Off," online <<http://www.economist.com/node/2338716>> (last accessed 14 January 2016).

Guangning Tian , Jianjun Li Ying Xue & Sara Hsu (2016) "Systemic Risk in the Chinese Shadow Banking System: A Sector-Level Perspective." 52 *Emerging Markets Finance and Trade* 475–486.

Major Tian (2015) "Can Alibaba's Ant Financial Disrupt China's Financial Industry?," online <<http://knowledge.ckgsb.edu.cn/2015/08/05/finance-and-investment/can-alibabas-ant-financial-disrupt-chinas-financial-industry/>> (last accessed 3 February 2017).

Lianting Tu (2016) "China's Banks May Be Getting Creative about Hiding Their Losses," online <<https://www.bloomberg.com/news/articles/2016-02-16/china-banks-seen-hiding-losses-in-opaque-receivables-accounts>> (last accessed 27 January 2017).

Adair Turner (2010) "Something Old and Something New: Novel and Familiar Drivers of the Latest Crisis," presented at FSA European Association of Banking and Financial History, Brussels, 21 May 2010.

US Bankruptcy Court of the District of New York (2010) "Final Report of Anton R. Valukas, Bankruptcy Court Examiner," in re: Lehman Brothers Holdings Inc. et al, 732–3.

John Vickers (2011) "The Independent Commission on Banking: Final Recommendations," online <<http://webarchive.nationalarchives.gov.uk/+bankingcommission.independent.gov.uk>> (last accessed 14 January 2016).

Susan Wachter (2015) "The Housing and Credit Bubbles in the US and Europe: A Comparison." 47 *Journal of Money, Credit and Banking* 37–42.

Bin Wang , & Tao Sun (2013) "How Effective Are Macroprudential Policies in China?," IMF, Working Paper No. WP/13/.

Don Weinland , & Gabriel Wildau (2016) "China's Banking Regulator Is Cracking Down on Financial Engineering that Chinese Banks Have Used to Disguise Trillions of Dollars in Risky Loans as Investment Products," online <<https://www.ft.com/content/4bb772de-1045-11e6-91da-096d89bd2173>> (last accessed 20 February 2017).

Gabriel Wildau (2016a) "Bad Loan Growth Slows at China Banks as Write-Offs Accelerate—Big Lenders Brace for Fallout from Government Efforts to Rein in Debt," online <<https://www.ft.com/content/479d038c-6e71-11e6-a0c9-1365ce54b926>> (last accessed 27 January 2017).

Gabriel Wildau (2016b) "China P2P Lending Regulations Target Hucksters and Risk-Takers," online <<https://www.ft.com/content/5b179264-69e0-11e6-a0b1-d87a9fea034f>> (last accessed 10 February 2017).

Gabriel Wildau (2016c) "Fintech: Chinese P2Ps Plagued by Flaky Guarantees," 3 August, online <<http://blogs.ft.com/tech-blog/2016/08/258908/>> (last accessed 10 February 2017).

WorldBank.org (2016) "Bank Nonperforming Loans to Gross Loans," online <<http://www.data.worldbank.org/indicator/FB.AST.NPER.ZS?page=2>> (last accessed 20 January 2017).

Xinhua Finance Agency (2015) "China Banking Regulator Revises Rules on Banks' Leverage Ratio Requirements," online <<http://en.xfafinance.com/html/Industries/Finance/2015/53647.shtml>> (last accessed 20 January 2017).

Duoqi Xu , & Weiyu Zhang (2015) "Operational Dilemma and System Design of Financial Management Products with Non-Guaranteed Principal in China." 3 China Legal Science 4-38.

Yang Yuan (2016) "Chinese Banks Begin Raising Capital for Debt-for-Equity Swaps," online <<https://www.ft.com/content/08a21370-9775-11e6-a1dc-bdf38d484582>> (last accessed 20 January 2017).

Yi Zhou (2016) "Establishing a Deposit Insurance System in China: A Long-Awaited Move toward Deepening Financial Reform." 16 Chicago-Kent Journal of International & Comparative Law 46-97.